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U.S. Banks Balk at Data Classification

Canadian initiative for security leads the way

BY JAIKUMAR VIJAYAN
AND LUCAS MEARIAN

An initiative by several leading Canadian banks to develop standards for data classification has shined an unwanted spotlight on U.S. banks, which appear to be unwilling to follow suit.

A working draft of Canada's common data-sensitivity classification scheme is expected to be released by year's end, said Robert Garigue, coordinator of the initiative

and chief information security officer at Toronto-based Bank of Montreal.

The goal is to come up with a standard that "embodies a minimum set of expectations around information classification and controls," he explained.

But there is no similar effort under way in the U.S., despite a growing recognition of the need for a common standard for data labeling here as well, several analysts said.

Standards for information classification will not only

U.S. Banks, page 49

ONLINE

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Circuit City Chooses Linux for Cash Registers in 600 Stores

Retailer cites total cost of ownership, desire for less customization

BY CAROL SLIWA

Circuit City Stores Inc. last week bucked the trend of retailers opting for Windows-based point-of-sale systems when it announced plans to migrate to IBM SurePOS 300 cash registers running Linux at its 600 stores.

Less than 5% of the

installed base of North American cash registers run Linux, according to Franklin, Tenn.-based IHL Consulting Group. But the open-source operating system, which has been struggling to gain traction on corporate desktops, is seeing a slow uptick in usage among retailers upgrading their POS systems.

Another major retailer that recently announced a move to Linux-based IBM cash registers

Linux POS, page 49

INSIDE

Linux skills are a hot commodity. **PAGE 10**

KNOWLEDGE CENTER WEB SERVICES



Web Services Hurdles

SPECIAL REPORT

As usual, the technology is harder to roll out than vendors would have you believe. We take a sober look at the challenges of implementing service-oriented architectures. Stories begin on page 33.

ONLINE

BOOK EXCERPTS: Learn more about what Web services are and when to use them. QuickLinks **a4860** and **a4870**

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Budgetary Black Holes

In the Management section: That giant sucking sound is your IT project budget going down the tubes. Here are 10 prime mistakes that can cost you big time — and how to avoid them. **Page 29**

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KNOWLEDGE CENTER WEB SERVICES

Web Services Hurdles

In this special report, we take a sober look at the challenges of implementing service-oriented architectures, including security, governance and reliability.

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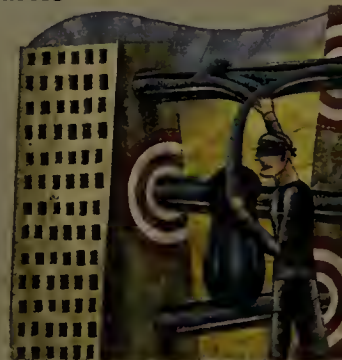
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Editor's Picks. A guide to Computerworld's coverage of Web services and service-oriented architectures, including applications, security and predictions.
QuickLink 48329

Web Services Glossary. Get familiar with Web services

terms, courtesy of the World Wide Web Consortium.
QuickLink a4850

Book Excerpts. Explanations of what Web services are and when to use them, from *Web Services Explained*, at QuickLink a4870, and *Web Services: A Manager's*

Guide, at QuickLink a4860.

Accessible Networks Are Key. Opinion: Richard Stevens of Capient sees great promise in Web services, but not until the public UDDI network becomes trustworthy.
QuickLink 48467

AT DEADLINE

Google Begins Stock Auction

Google Inc. opened the auction for its much-anticipated initial public offering on Friday, with plans to announce the pricing of its stock this week. Google has estimated that its shares will be priced between \$108 and \$135 each. The start of the auction came a week after the company revealed that it may have violated U.S. securities laws by issuing unregistered shares to employees and consultants. The company has offered to buy back the shares in question in the hope of rectifying the matter.

Petition Filed Against E-Voting System

Eight Maryland voters last week asked an appeals court to force the Maryland State Board of Elections (SBE) to address alleged security risks in an electronic voting machine system and provide a voter-verified paper trail during elections. The voters filed motions to force the SBE to fix alleged problems with an e-voting system sold to the state by Diebold Inc.

AOL, Yahoo Step Up Antispam Efforts

America Online Inc. and Yahoo Inc. plan to use technology to verify the source of e-mail messages as a means of fighting spam. In September, AOL will verify the source of incoming e-mail using a component of Microsoft Corp.'s Sender ID architecture. Yahoo will use its DomainKeys authentication technology to sign all e-mail coming from its mail servers by year's end.

Short Takes

DELL INC. posted second-quarter revenue of \$11.7 billion, 20% higher than in the same quarter a year ago. . . . **Eric Benhamou** will resign as chairman of **PALM-SOURCE INC.** on Oct. 28. Palm-Source said he is expected to continue in his role as chairman of sister company **PALMONE INC.**

HP World Opens as Key Exec Heads Roll

Faltering financial results trigger three dismissals

BY PATRICK THIBODEAU

AS HP WORLD opens in Chicago this week, the buzz among the expected 7,000 attendees will no doubt be about the disappointing financial results that sent some top Hewlett-Packard Co. executives packing.

A key problem for HP is the principal focus of many attending the conference: enterprise hardware. Enterprise storage and server revenue fell 5% to \$3.4 billion, while overall revenue for the company grew 9% to \$18.9 billion.

In particular, HP's Alpha server line was down 32%, and NonStop servers fell 25%. There was also a 23% decline in storage systems revenue.

Bill Moran, an analyst at D.H. Brown & Associates Inc. in Port Chester, N.Y., said the decline in Alpha revenue likely reflects falling customer interest in a system that HP will stop producing in 2006 but will continue to support until 2011. The NonStop decline may indicate that customers are waiting for HP to complete its transition from the MIPS processor to Itanium, said Moran.

Management Shuffle

HP CEO Carly Fiorina fired Peter Blackmore, executive vice president of HP's Customer Solutions Group. He was replaced by Mike Winkler, who had been with Compaq. Jim Milton, CSG senior vice president and managing director of the Americas region, and Kasper Rorsted, CSG senior vice president and managing director for Europe, the Middle East and Africa, were also dismissed.

The management shuffle "deflects criticism" away from Fiorina, said Moran. "She has bought herself some time," he added. Fiorina isn't scheduled to speak at HP World.

Product announcements expected at the show include expanded virtualization capabilities in the Itanium-based Integrity server line. A new version of Global Workload Manager will now be able to handle Linux as well as HP-UX, and manage hundreds of servers and partitions. It's now limited to 20 partitions.

HP is also introducing sub-CPU partitioning on the Integrity line, which will allow users to divide the CPU up to

20 ways and run HP-UX and Linux on the partitions.

There are currently two versions of HP-UX: one for the Alpha-based HP 9000, and the other for Integrity. But in

October, HP will deliver a unified version.

"This is in response to customer demand," said Don Jenkins, vice president of marketing for HP's business-critical servers. "Many customers want to manage one release, patch update, etc., across their environment."

HP will also announce Alpha chip

improvements that will boost performance by 16%, officials said. But it is still encouraging users to move to Itanium.

Seattle-based Boeing Employees Credit Union recently



CEO FIORINA deflected criticism away from herself, one analyst says.

HP Puts Part of the Blame on SAP Migration

Hewlett-Packard said last week that part of the blame for the revenue shortfall in its enterprise servers and storage group rested on a problematic migration to an SAP AG order-processing and supply chain system.

HP CEO Carly Fiorina said the problems cost the group about \$400 million in revenue and \$275 million in operating profits.

"We executed poorly on the migration," Fiorina said. While the problems primarily hit HP's industry-standard server business, they also affected the business-critical and storage businesses.

Although the company worked to ensure product availability, HP still lost sales and was forced to fulfill direct orders through channel partners and expedite other orders via air shipments. Those moves cut into the company's gross margins.

HP is a close partner with

SAP and offers specialized consulting services around SAP's supply chain and ERP software.

HP has a "strong and productive relationship [with SAP], first as a customer and as a strategic partner," said SAP Americas Inc. spokesman William Wohl. "The relationship continues to expand even today, as teams talk about deepening that customer relationship."

"We can't talk specifically about what's happening inside HP," Wohl added. But he noted that in HP's statements, no blame for the problems has been attributed to SAP's software.

HP is a highly decentralized company whose various divisions make their own decisions around implementing software and order management processes, noted David Dobrin, an analyst at B2B Analysts Inc. in Cambridge, Mass. After its previous implementations, it would seem

logical that HP should have known how such rollouts can create problems severe enough to affect sales and prepared itself accordingly.

"Even if HP doesn't have the institutional memory, you would think that SAP would," he added. This case of a high-tech company "choking on its own dog food" was likely caused by human error during the execution of the project, and not by the software itself, said Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Berkeley, Calif. "I was impressed HP fired management and didn't nail SAP to the wall," he said.

However, it's surprising that "good software could take a company down like this," Greenbaum added. "It doesn't get more embarrassing than that."

—Marc L. Songini

EVENT PLANNING

Hewlett-Packard details plans for its unified technology conference:

QuickLink 48769
www.computerworld.com

N.H. Agency to Revamp Criminal Offender Systems

Move follows years of struggle to overcome glitches

BY MARC L. SONGINI

The New Hampshire Department of Corrections (DOC) hopes to retire a legacy criminal offender field management system with a long history of troubles as part of an effort to rectify shortcomings in the agency's IT infrastructure.

The original system, designed to help with the case management of criminal offenders on probation or parole, was to have been built by Computer Associates International Inc.

The custom application was also supposed to handle financial transactions, including the payment of fines to the state

and of restitution money to victims. But after working on the system for more than two years and spending \$240,000, the state had little to show for its efforts [QuickLink 28102].

The DOC and CA severed all ties in August 2002. As part of a negotiated settlement, CA refunded the money that the DOC had paid, according to Ron Cormier, a project manager at the agency.

Makeshift System

After the effort failed, in-house staffers tinkered with the existing parole and probation management system, creating a stripped-down version of the application to handle restitution and fine payments.

By writing code around a "very old and outdated" Informix database, the DOC was

able to put together a system that allows it to issue restitution checks to victims every 30 days — down from the original 90-day processing cycle, Cormier said.

While that system now handles restitution accounts adequately, it lacks the case management features the agency needed when it hired CA, said state Rep. David Welch, chairman of the Criminal Justice Committee that has oversight of the DOC.

"It's a basic system that doesn't fulfill our needs," he said. The system that was envisioned would have let police or field correction officers easily access the full records of probationers caught committing crimes.

As a result, the DOC plans to retire its two Unix-based of-



fender management systems and replace them with a single application running on a Microsoft Corp. SQL Server database. The agency issued a request for proposals earlier this year and is awaiting approval from the governor's office before moving forward with its plans.

The DOC wants a Web-based system that will support the payment of fines and parole management, as well as the prison facility and management processes associated

with handling New Hampshire's 2,500 inmates and 7,000 offenders who are on parole or probation.

Cormier said the system will be written to Microsoft .Net programming specifications and allow prison facilities and field service officers, for example, to share data.

"When an offender comes into the system, his entire stay would be tracked through until he's on parole, including the financial processes," said Cormier.

Tight IT Security in Place at Athens Games

Strategy keys in on attack prevention and containment

BY JAIKUMAR VIJAYAN

The Olympics got under way in Athens last week amid some of the tightest security in the history of the Games — not just on the physical side, but on the IT side as well.

Fears of a cyberattack on the networks and systems that support the event have prompted the Olympic Games' technology integrator, Atos Origin in France, to implement a multilayered defense focused both on attack prevention and containment.

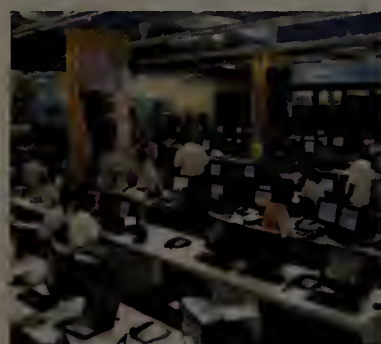
At its core is a segmentation strategy under which the main network has been carved up into multiple virtual networks, said Jean Chevallier, vice president of Atos Origin's Olympics Games program.

Each of the Olympic venues sits on its own LAN segment.

Networks serving TV broadcasters and print reporters, for instance, are isolated from the ones serving athletes and the Olympic committee. Users on one network don't have access to another network.

"The idea is containment," Chevallier said. "If we have a problem on one network, we can contain that issue to that network."

All of the 10,500 PCs, 900 servers, 2,500 terminals and 4,000 printers that are connected to the Olympic net-



A TECHNOLOGY OPERATION center monitors a network of 10,500 PCs and 900 servers.

work have been assigned unique identifiers that also tie them to specific locations on the network.

A machine that's disconnected from its assigned network location will not be permitted access again without administrator intervention; the port is shut down to prevent unauthorized systems from logging on. Each of the machines has also been locked down into one of 218 hardware and software configurations.

The precautions are needed because many of the machines are accessible in public areas in the Olympic venues, said Chevallier.

Software from Computer Associates International Inc. will monitor the networks for intrusions and other security breaches. Months have been spent scripting filters to ensure that only significant security events reach administrators, Chevallier said.

Each core system has its

own backup, and the main data center is mirrored at a remote location 200 miles outside Athens to ensure high availability and disaster recoverability, Chevallier said.

For the past two months, the networks and systems have also been subjected to a series of simulated worm and virus attacks, malicious hacks and network failures. "In fact, about 80% of our time has been spent testing this out," Chevallier said.

During the Games, a team of 400 IT professionals will monitor systems in 61 Olympics-related venues from a central technology operation center located in the main Olympics complex in Athens. An additional 3,000 IT volunteers will provide support. **48815**

MORE ONLINE

The U.S. Olympic team powers up with Gateway equipment:

QuickLink 48731
www.computerworld.com

Lesson Learned

Although details about the upgrade are still confidential pending the governor's approval, the DOC hopes to launch the implementation this October and wrap up the project by April 2006.

Cormier doesn't know how much it cost the state to create the restitution database now in place, but he said the DOC has learned from its overall experience with the data warehouse project.

"We wanted the initial system to be built from the ground up, and in the requirements phase of the project, [DOC officials] asked for a lot instead of ensuring they got minimal functionality and building onto that," said Cormier. Ultimately, he said, "we learned we needed to ask for a base system, then build off that."

Because of the negotiated settlement between the DOC and CA, Cormier couldn't elaborate on why the project went awry. CA officials weren't available for comment. **48793**

BRIEFS

Symantec Lowers Revenue After Glitch

Symantec Corp. last week reduced its reported revenue for the first quarter of fiscal 2005 by \$20 million after discovering that it had incorrectly configured an internally developed accounting tool. The error involved software used to calculate deferred subscription revenue from Symantec's international retail business and had no effect on Symantec's cash position.

Cisco Posts Record Profit of \$1.4B in Q4

Cisco Systems Inc. last week reported record fourth-quarter net income of \$1.4 billion, a significant leap from net income of \$982 million in last year's fourth quarter. The profit came on net sales of \$5.9 billion, up from \$4.7 billion in the year-earlier quarter. Cisco CEO John Chambers said the company plans to add 1,000 employees by year's end, a majority of them in research and development.

IBM Lands Linux Mainframe Deal

IBM said last week that Endress + Hauser (International) Holding AG in Germany is consolidating its SAP AG systems onto two eServer zSeries 990 mainframes running Linux. IBM isn't disclosing the deal's value, but a company representative said that one server fully integrated for Linux generally costs about \$122,400 per processor. The mainframes Endress + Hauser purchased have 36 processors each, which would put the deal's value at about \$8.8 million.

Short Takes

MOTOROLA INC. said it was informed by the U.S. Internal Revenue Service that it may owe about \$500 million in additional taxes for 1996-2000. . . . A simplified and lower-priced version of **MICROSOFT CORP.**'s Windows XP will begin shipping on new PCs in Malaysia, Indonesia and Thailand in October (see Frankly Speaking, page 50).

Turmoil at BEA Casts Cloud Over Its Future

Revenue drop, exec departures raise viability questions

BY CAROL SLIWA

QUESTIONS continued to swirl last week about BEA Systems Inc.'s long-term viability, as the company's second-quarter revenue fell short of expectations on the heels of the resignations of some top executives. Although BEA's \$263.2 million in revenue was up 7% from \$245 million for the second quarter last year, the figure fell short of the initial projection of \$265 million to \$275 million. It was also the second straight quarter that BEA failed to meet license revenue expectations.

Just a week earlier, Scott Dietzen left his position as chief technology officer at the San Jose-based software maker.

Dietzen had joined BEA with its 1998 acquisition of WebLogic Inc., maker of the application server that became the company's main product line.

Dietzen was the second technology visionary to depart in less than two weeks. Adam Bosworth, the chief architect responsible for longer-term initiatives, took a senior engineering role at Google Inc. after leaving BEA on July 23.

Also gone is Scott Edgington, vice president of worldwide channels and alliances, who went to Voltage Security Inc. in Palo Alto, Calif. Rick Jackson, senior vice president of product marketing, left to become chief marketing officer at Borland Software Corp.

"There may be some further changes," said BEA CEO Alfred Chuang, during a conference call last week to report the financial results. But he said BEA has "taken those into

BEA-Ting Feet

SCOTT DIETZEN
Chief technology officer

ADAM BOSWORTH
Chief architect

RICK JACKSON
Senior vice president of product marketing

SCOTT EDGINGTON
Vice president of worldwide channels and alliances

account in our planning. This is a very strong company with more than 3,000 employees."

But David Rudow, a senior research analyst at Piper Jaffray & Co. in Minneapolis, predicted more departures over the next month. "With these high-profile people leaving, you've got to wonder about the future vision of the firm and what customers are

Some Users Unfazed by BEA Woes

BEA Systems' revenue shortfall and recent executive resignations are causing speculation about the company's future. But some users are unfazed by the turn of events.

"Market share comes and goes. They have a huge customer base, and I find it hard to believe they would just go away," said Chris Hjelm, CTO at Orbitz LLC in Chicago. "The worst case is somebody picks them up."

Hjelm said he's not overly concerned about BEA's future, in part because Orbitz has the flexibility to switch to a different application server if necessary.

Jim Kline, a project manager at The ServiceMaster Co. in Downers Grove, Ill., said his company upped its commitment to BEA, signing an agreement last month to use WebLogic Platform. ServiceMaster previously used BEA's application servers for

e-commerce and back-office business applications but now plans to add WebLogic Portal and Integration. "The cohesiveness was appealing to us," he said.

Kline said ServiceMaster wasn't aware of the various BEA executive departures and revenue forecasts when making its decision. But he said he's not concerned. "If they don't fill the void, then it would become a worry," he said. "But there's a lot of smart people at BEA."

"We have confidence in the products, and we anticipate no changes at this time," said another BEA customer, Michael Jones, CIO at Circuit City Stores Inc. in Richmond, Va.

One of BEA's problems has been users who are slow to move to WebLogic 8.1, and license revenue has lagged. Analysts said the problem isn't BEA's technology, which re-

mains top-notch, and there's no reason to think that the recent woes will result in dire consequences, given BEA's cash reserves and customer base.

But since the application server market has become commoditized, BEA needs to further differentiate itself to achieve growth and withstand the increasing pressure from IBM, Oracle Corp., Microsoft Corp. and open-source competitors. Some also have speculated that BEA will buy a company or be acquired, potentially by Oracle or Hewlett-Packard Co.

"There is no reason for any rash action" by BEA customers, said Yefim Natis, an analyst at Gartner Inc. "But users should be watching carefully and delay any massive strategic investments with BEA until their long-term business strategy is clarified."

— Carol Sliwa

going to do," he added.

"An awful lot of enterprise customers have questioned me recently about the long-term viability of BEA," said Anne Thomas Manes, an analyst at Midvale, Utah-based Burton Group. "That's a significant issue if enterprise customers are saying, 'Is it safe for me to buy from them?'"

Kevin Faulkner, vice president of investor relations at BEA, insisted that the company is "strong financially," with \$1.6 billion in cash. He also noted recent changes that BEA thinks will help going forward.

For example, Tom Ashburn, who joined BEA two years ago after a 33-year career at Hewlett-Packard Co., assumed the newly created position of executive vice president of worldwide field operations. Ashburn will oversee the sales, services and marketing operations that are being unified under one umbrella "for better coordination of those functions," Faulkner said.

Faulkner also cited the importance of updated priorities set by BEA's reorganized product leadership team, now headed by Chuang. Priorities include hardening WebLogic 8.1 to improve scalability, reliability and performance; building a special application server edition for telecommunications customers; improving features in the portal and integration products; and shipping the core 9.0 WebLogic Platform in the first half of next year.

"You should expect to see BEA become more focused and aggressive," said Faulkner. "There will be people who like that program, agree with that program and are on board to execute. And there will be people who disagree, and they'll move on."

Mark Carges, a key force behind BEA's Tuxedo software, replaced Dietzen as CTO. Dietzen couldn't be located for comment. Bosworth declined comment, citing a quiet period at Google. **48814**

Mark Hall is on vacation. His column, On the Mark, will return next week.



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Certification Rarely Required As Linux Job Market Grows

Experience often more highly valued than book learning in potential hires

BY TODD R. WEISS

EMPLOYERS appear to be looking for more and more workers with Linux IT skills, but they're not necessarily seeking those with Linux certification, according to statistics from online IT job board Dice.com.

Of the approximately 49,000 IT job notices listed on Dice.com in the past few weeks, about 2,200 wanted applicants with Linux experience, said Scot Melland, CEO and president of the New York-based company.

"That's up 190% from a year ago. It qualifies as a hot skill set that's really growing in demand," he added.

More than half of the Linux-related jobs being advertised are developer or programming positions, and about a third are located in California.

Practical Knowledge

Perhaps more importantly for job seekers with Linux skills, employers don't usually require that they be certified in Linux, Melland said. "Linux certification has not taken off" as a must-have skill for employers looking over job candidates, he said. "I really don't know if it will."

Instead, employers seem to prefer real-world knowledge. "The mantra for the past 12 or 24 months has been experience," Melland said.

While the most popular Linux certification mentioned in Dice.com's job listings is for Red Hat Certified Engineers, only 10 of the 2,200 Linux job listings referred to the certification, he said. "I would say pretty much that that's pretty low," Melland said.

Chris Hjelm, chief technology officer at Chicago-based

online travel service Orbitz LLC, said that "a candidate's ability to learn, solve complex problems, apply their experience and possess solid interpersonal skills and team fit are more relevant" than certifications.

"There is an extensive technical interview process, and the depth of Linux screening varies, depending on the position," Hjelm said. "It works well, given that I haven't seen a recent hire leave due to not having the requisite technical skills."

Joe Poole, technical support manager at Boscov's Department Store LLC in Reading,

In Demand

2,243

Linux-related jobs currently posted on Dice.com

190%

Growth in Linux job postings since June 2003

90%

Growth in Linux job postings since January 2004

SOURCE: DICE.COM

Pa., said that when his company hires IT staffers, Linux certification may help get an applicant into an interview more quickly, but it's not mandatory.

The department store chain is a big Linux user in its operations, from its stores to its mainframe and servers in its

data center.

The reason Linux certification isn't a must, he said, is that "if you're hiring from the outside, you really don't know [if applicants are qualified], even if they're certified."

Getting a Grilling

"Book learning and practical experience are two different things," Poole said. To find out more about an applicant's training during an interview, Poole said he will have the potential new hire talk to IT technicians inside the company so they can gauge the applicant's actual experience. "You can see whether that generates nods of approval or blank stares," he said.

Brian Dewey, a network engineer at Livermore, N.Y.-

based Raymour & Flanigan Furniture, which uses Linux in its operations and data center, agreed, saying his company doesn't require certification in Linux or any other operating system for its IT hires.

Instead of requiring certification, applicants are grilled with technical questions in an effort to trip them up and separate the qualified candidates from the rest, he said.

Jonathan Eunice, an analyst at Illuminata Inc. in Nashua, N.H., said that while employers want to hire only qualified workers, certification isn't typically a prerequisite because it doesn't always guarantee that the applicant has the necessary skills. "It's a nice proxy" though, he said. "It does give people an additional feeling of confidence" when hiring. **48818**

MORE ONLINE

For additional news and information, visit our Linux special coverage page:

QuickLink \$1000
www.computerworld.com

Antiphishing Tool Adopted by eBay Now Available to the General Public

BY JAIKUMAR VIJAYAN

eBay Inc.'s popularity clearly has a downside. The company has become a prime target for "phishing" attacks by online perpetrators who e-mail unsuspecting users and set up Web sites in the guise of the popular online auctioneer.

One of the weapons eBay is using to fight back is a product from WholeSecurity Inc. called Web Caller-ID, which allows users to verify the authenticity of a Web site. This week, Austin-based WholeSecurity is making Web Caller-ID generally available to other users as well.

The browser-based software has been embedded in the Account Guard feature of the eBay tool bar since January. It not only detects fake sites in real time but also prevents users from accessing them.

"No technology is going to

solve 100% of the phishing problem," said Howard Schmidt, eBay's chief information security officer and a former White House cybersecurity adviser. "But this has provided an additional layer of protection for users."

The product uses a unique behavior-based detection method to identify spoofed Web sites, said Scott Olsen, a senior vice president at WholeSecurity.

Unlike products that work by blacklisting sites that are already known to be fraudulent, Web Caller-ID evaluates every site the user accesses for suspicious behavior, Olsen said. Pages are analyzed and scored using a proprietary rating system that

determines whether a page is valid or spoofed.

Users are alerted and blocked when they attempt to launch such pages or enter confidential information into them, Olsen said. WholeSecurity declined to release pricing information.

The technology is effective at detecting new and unreported spoof sites that are often used in phishing scams, said Avivah Litan, an analyst

at Stamford, Conn.-based Gartner Inc. "It's a big jump over blacklist technology," she said.

But there are caveats.

To be protected, users need to download plug-ins that are integrated into browsers or tool bars. Currently, only

very large sites, like those of eBay and Yahoo Inc., have such tool bars, Litan said. Users would also need to download multiple tool bars as more companies start using the technology, she said.

WholeSecurity's technology is being released at a time when phishing attacks, which use spoofed e-mail and Web sites to fool users into divulging personal information, are rising.

The Anti-Phishing Working Group reported 1,422 unique phishing attacks in June, up 19% over May. For the 12-month period that ended in April, phishing attacks cost victims \$1.2 billion, with U.S. companies bearing most of the costs, Gartner said.

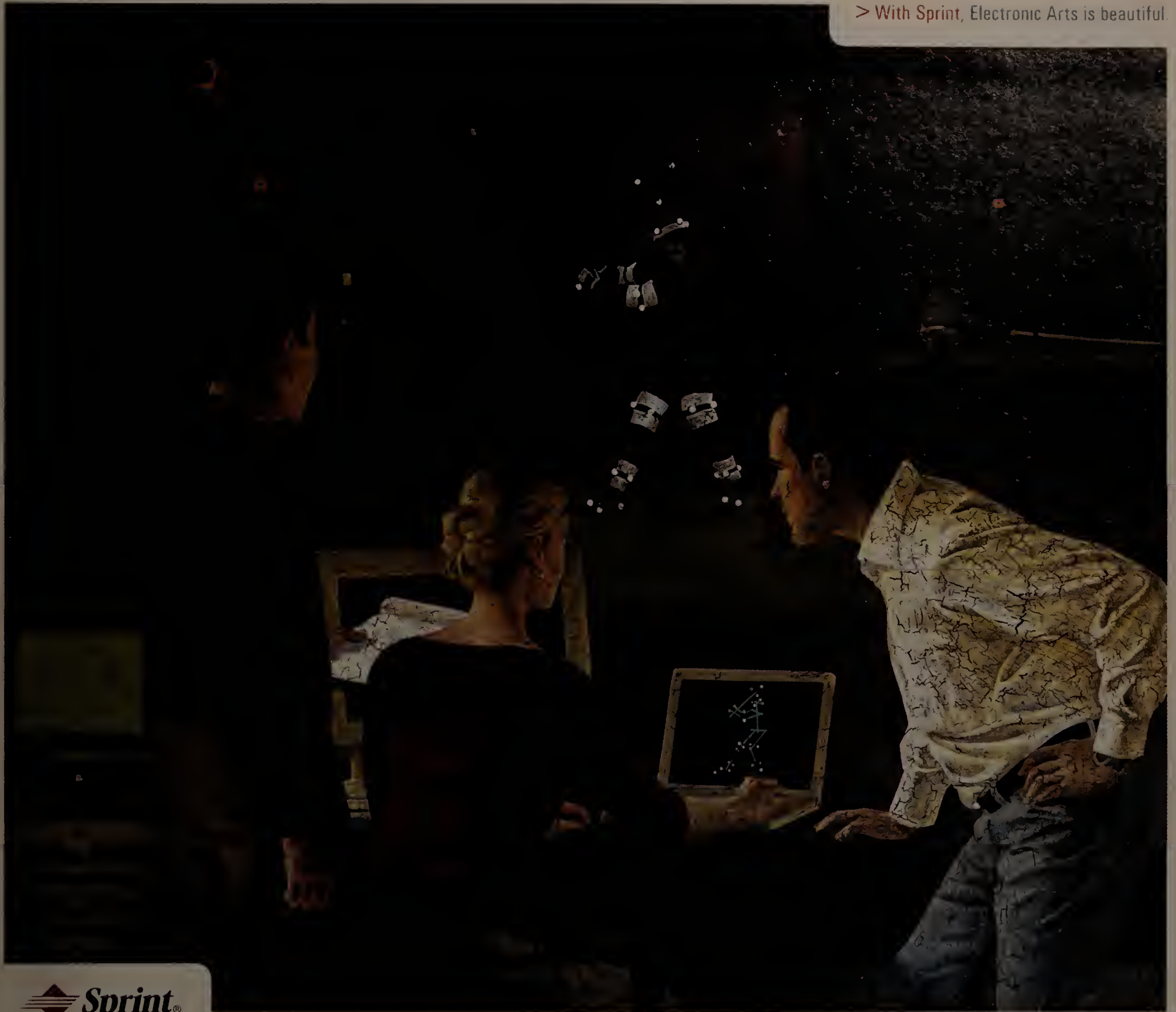
The trend has resulted in a "growing sense of urgency" to implement steps to combat the problem, according to Gartner.

Other vendors offering anti-phishing tools include Cyota Inc. in New York and Mark-Monitor Inc. in Boise, Idaho. **48811**



EBAY'S SCHMIDT:
"This has provided an additional layer of protection for users."

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IBM Tells Internal Users Not To Install Windows XP Update

Cites compatibility problems with SP2

BY JORIS EVERS

DEVELOPERS at Microsoft Corp. may be celebrating that they finished work on Service Pack 2 for Windows XP [QuickLink 48694], but IT departments around the world now face the question of whether they should update their systems.

IBM, for one, is holding off on installing the security-focused update for Windows XP. In a note headlined "To patch — or not to patch," posted Aug. 6 on its corporate intranet, IBM told employees not to download SP2 when it becomes available because of compatibility issues. A copy of

the note was obtained by IDG News Service.

"While this patch may be good news for other Microsoft Windows XP owners, IBM is directing XP users not to install SP2," the note states. With close to 400,000 desktops, IBM is a very large Microsoft customer.

"IBM's large number of Web applications will need to be tested and some modified to work correctly with SP2. Currently, some high-profile, business-critical applications are also known to conflict with SP2," IBM said in the note. "When the current issues and concerns have been addressed, IBM will deploy a

customized version of SP2."

An IBM spokeswoman declined to comment on internal IT issues.

A Microsoft spokesman said the company believes IBM's recommendation to its employees is prudent.

"Microsoft would expect any well-run IT organization to make the same recommendation," he said. The company has "recommended all along that customers thoroughly test SP2 before deploying it" to ensure compatibility and avoid unforeseen problems, he said.

IBM alerted its users on the same day Microsoft announced the release to manufacturing of the service pack. The Windows XP update will be available soon through

downloads, retail distribution and free CDs, as well as on new PCs. A network installation package will be available for enterprise users.

SP2 for Windows XP is more than the usual package of bug fixes and updates. Microsoft has made a trade-off, focusing on security at the expense of compatibility. As a result, SP2 can render existing applications inoperable.

Broad Changes

IBM isn't the only company showing evidence of compatibility problems with XP SP2; Microsoft's own software is also affected. The vendor recently released an update for Microsoft CRM 1.2 because SP2 will prevent the original application from running correctly.

Because of Microsoft's broad changes, analysts have compared the XP service pack to a Windows upgrade rather than a simple update. Business users typically take much longer to install a new version of Windows than a service pack because of compatibility testing.

Thomas Smith, manager of desktop engineering at a large Houston-based company that he asked not be identified, said he hopes to equip his 5,000 desktops with a customized version of the service pack before Microsoft pushes it out on Windows Update.

Many of the desktops Smith manages are scattered throughout North America and use common high-speed Internet connections such as DSL or cable. Although the company uses a remote management tool supplied by Altiris Inc., Smith said he relies on Windows Update for patching. If the standard Windows XP SP2 distribution is applied to his machines, it will block access to several corporate Web applications, he said.

Microsoft will help users in Smith's position, said Barry Goffe, a group manager in Mi-

Microsoft would expect any well-run IT organization to make the same recommendation. [We've] recommended all along that customers thoroughly test SP2 before deploying it.

.....
A MICROSOFT SPOKESMAN

crosoft's Windows group. The software maker plans to offer simple ways to set a unique registry key on XP desktops that will instruct the systems to skip SP2 but still download other critical updates through Windows Update and Automatic Update, Goffe said. "We want to give customers some breathing room," he said.

Nevertheless, Microsoft is urging all users to install SP2 as soon as they can, Goffe said. "This is not about fun and games," he said. "SP2 is about improving the security of our customers' infrastructure. We have spent a lot of time making sure that this delivers a lot of value to all our customers. We're urging all customers to deploy SP2 as soon as possible."

Business users obviously need to test, but Microsoft can't be blamed if users are now unpleasantly surprised by SP2, said Michael Cherry, an analyst at Directions on Microsoft Inc. in Kirkland, Wash.

"Microsoft has been more than forthcoming about the number of changes in this service pack and making it available for testing," Cherry said. "I would say to IT departments that they want to get their testing done quickly because there are significant improvements in this service pack, and I am not sure you would want to forgo those."

☎ 48777

Evers writes for the IDG News Service. Computerworld's Todd R. Weiss contributed to this story.



Afghan women try using one of the LeapPad talking books.

U.S. Sends Health Data Devices to Afghanistan

The U.S. Department of Health and Human Services is distributing thousands of computer-based talking books in Afghanistan as part of a \$1.5 million program designed to provide basic health information to Afghans who can't read or write.

The agency worked with LeapFrog Enterprises Inc. in Emeryville, Calif., to develop the 42-page interactive health care manuals, which use point-and-touch technology and support Afghanistan's two major languages, Dari and Pashto. LeapFrog adapted devices used to teach children in the U.S.

HHS Secretary Tommy Thompson has visited Afghanistan three times since 2001 to evaluate the health care needs of the country's residents. In a statement, he noted

that almost 80% of Afghan women are illiterate and that infant, child and maternal mortality rates "are all shockingly high." HHS expects that the LeapPad devices will be "an important tool" for helping to improve the health of families in Afghanistan, he said.

Jim Marggraff, LeapFrog's executive vice president for worldwide content, said the LeapPads are based on a proprietary chip. Each book used in a LeapPad comes with a data cartridge, which is synchronized with paper-based content via a screen that the book is placed on. When a user touches text or a picture, the book "reads" it through a Musical Instrument Digital Interface connected to the cartridge.

HHS has ordered 20,000 of the modified LeapPads, which measure 9 in. by 12 in. The agency has distributed about 2,000 devices to families and health care facilities in Afghanistan in an initial rollout that will be used to evaluate the technology's usability and its effect on the health-related behavior of Afghans. ☎ 48630

— Bob Brewin

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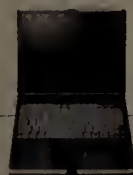


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BRIEFS

Seagate Says Rival Can't Get Ex-worker

Hard drive maker Seagate Technology LLC is seeking a court injunction to prevent a former employee, Pete Goglia, from working for Western Digital Corp., saying Goglia knows too much about Seagate's hard drive reading and writing technology to work for a competitor. Goglia, who worked at Seagate for 17 years, was most recently executive director of its recording-head operation.

FTC Settles With Pop-up Spammer

San Diego-based D Squared Solutions LLC, which allegedly used a barrage of pop-up ads to sell pop-up blocking software, is barred from employing that tactic in the future under a settlement announced last week by the Federal Trade Commission. D Squared allegedly used Windows Messenger Service to send pop-ups that appeared as frequently as every 10 minutes, according to the FTC.

McAfee Updates E-Business Server

McAfee Inc. last week released a new version of its E-Business Server data encryption software that it said will make it easier for companies to encrypt data sent outside their networks. E-Business Server 8.0, available now, will also allow large companies to remotely manage multiple E-Business deployments from a single interface, McAfee officials said.

Nortel Restatement Due on Thursday

Nortel Networks Ltd. will provide preliminary, unaudited results for the first two quarters of 2004 on Aug. 19, the company said last week. Nortel is under investigation by the Ontario Securities Commission and the U.S. Securities and Exchange Commission regarding the restatement of its financial results as far back as 2001.

HUD Again Awards EDS \$750M Services Contract

Lockheed Martin had filed a complaint over the original \$860M bid last year

BY TODD R. WEISS

FOR THE SECOND TIME in a year, the U.S. Department of Housing and Urban Development has awarded a disputed IT services contract worth more than \$750 million to Electronic Data Systems Corp. instead of to the vendor that previously provided the services.

HUD again awarded the contract to EDS on Aug. 6, after a seven-month review that began after the current IT services vendor, Lockheed Martin Simulation, Training and Support (LMSTS), filed a protest last year against the contract award. In its complaint, LMSTS alleged that the government agency misevaluated the business proposals from the two companies and "made an irrational source-selection decision."

An audit by the Government Accountability Office in response to the complaint agreed and determined that HUD's decision to award the contract to EDS was unreasonable and should be rebid [QuickLink 43933]. The contract was originally valued at about \$860 million.

After a new review, however, the agency again awarded the HUD Information Technology Systems (HITS) con-

tract to Plano, Texas-based EDS. Under the deal, EDS will provide the staff, hardware, software, telecommunications, facilities and services needed to deliver HUD's basic IT functions to about 18,000 workers in more than 80 offices nationwide.

The contract has a base period of four months plus nine option years, with a total potential value of \$750 million.

Nettie R. Johnson, a spokeswoman for LMSTS, said in a statement that the latest HUD decision is "even more surprising than its first award" of

the contract. "While we are disappointed at this outcome, we have requested a debrief and look forward to learning how HUD made its selection of EDS for the critically important 10-year HITS program. We will not have any further comment on this matter until we receive our debriefing from HUD," she said.

HUD spokesman Jereon Brown said he had no further comment. "I can't go into specifics," Brown said.

Jim Duffey, vice president of global sales at EDS, said that despite the delays, the company is eager to get back to work on the HUD IT project. "It has been a long and arduous process, but the new award by HUD reaffirms that EDS offered the superior solution — twice," he said.

The IT services will include enterprisewide data processing and management from mainframe to the desktop, information security, technology refresh services, help desk support, user support, disaster recovery, printing and distribution, networking services, wireless services, TV/video-conferencing and Web administration. **48772**

HUD Contract Timeline

AUGUST 2003

- EDS wins original contract.
- Lockheed files formal protest a week later.

JANUARY 2004

- HUD rebids contract.
- Deal audited by GAO.

AUGUST 2004

- HUD again awards contract to EDS.

Zurich Financial Outsources App Development to CSC

BY LUCAS MEARIAN

Zurich Financial Services, one of the world's largest insurers, has signed a seven-year, \$1.3 billion outsourcing agreement with Computer Sciences Corp. to hand off new application development and the management of more than 4,000 existing applications.

ZFS's server infrastructure will continue to be managed in-house, but the deal, signed late last month, will transfer about 1,600 of the Zurich-based company's 5,000 IT employees to El Segundo, Calif.-based CSC. About 650 of the employees being transferred are U.S.-based, ZFS said.

U.S. employees and personnel in the U.K. and Switzerland are expected to transfer

to CSC in the fourth quarter, and employees in Germany are expected to make the transition during the second half of 2005.

Expected Benefits

"We're getting a very, very flexible framework, where we can redeploy our skills and resources almost to any needs we want," said Michael Paravicini, ZFS's chief information technology officer. "Secondly, it's about productivity. It's about leveraging the expertise CSC has, making sure we can streamline our applications landscape and reduce the number of platforms and systems in it."

Paravicini said ZFS expects to reduce costs by about 20%

by employing CSC. "We [expect to] get to a very reasonable benefit early on in the contract, which is very important to me," he said.

ZFS's global organization has traditionally been a geographically oriented operation, in which each region runs on its own unique business applications, Paravicini said. Last year, in a move to standardize operations and cut costs, the company finished consolidating its physical infrastructure into two data centers, one for European and Asia-Pacific operations and one for U.S. operations.

About 85% of ZFS's applications are homegrown, according to Paravicini, who said the company will likely choose to standardize on some of its existing platforms instead of de-

veloping or buying new ones.

Bill Bradway, an analyst at Framingham, Mass.-based Financial Insights, said the insurance industry as a whole is five to seven years behind banking and brokerage firms in consolidating IT infrastructures and standardizing platforms. Paravicini agreed with that assessment.

Paul Defuria, chief technology officer for CSC's Financial Services Group, said his company will focus primarily on ZFS's bread-and-butter applications of insurance underwriting and claims.

"Certainly, they have an incredibly large insurance portfolio with millions of policies," Defuria said. "Policy administration, just by the sheer weight of it, is important."

48789

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Novell Bundles JBoss App Server

Red Hat launches app server as well

BY CAROL SLIWA

NOVELL INC. earlier this month bundled the open-source, J2EE-compliant JBoss Application Server with its SUSE Linux Enterprise Server 9, giving application developers a built-in deployment option.

Novell's SUSE Linux-JBoss offering includes a software development kit with documentation and tools that aim to make developers more productive. Technical support is being provided by Novell with backing from Atlanta-based JBoss Inc., which announced last month that its open-source application server passed Sun Microsystems Inc.'s compatibility test suite for Java 2 Enterprise Edition 1.4.

JBoss CEO Marc Fleury said Java virtual machine (JVM) performance had been hampered on Linux due to limitations with the kernel threading model. But Novell's SUSE

Enterprise Server 9 supports the 2.6 Linux kernel patches that fix the threading model, he said.

"That will lead to better performance and scalability for Java virtual machines, so now Linux can be a very serious enterprise-level choice when it comes to deployment platforms," Fleury said. "Novell is doing the right things to make SUSE Linux the best Linux platform to run Java. I certainly hope to see Red Hat step up with a 2.6 enterprise shipment of Linux."

Red Hat Inc. has incorporated some of the 2.6 kernel features into its current Red Hat Enterprise Linux 3 release. Version 4, due early next year, will be built around the new kernel, Red Hat spokeswoman Leigh Day said.

At the recent LinuxWorld Conference in San Francisco, Novell also announced that the next major release of its exteNd application suite, due in late 2005, will be bundled with JBoss Application Server 4.x rather than the exteNd Application Server it acquired in

JBoss User Profile

Windows	71%
Linux	61%
Solaris	25%
Other Unix	18%
Other	10%

Note: Multiple responses allowed
SOURCE: JBOSS INC., ATLANTA

2002 from SilverStream Software Inc.

A maintenance release of exteNd will support the JBoss application server by year's end, according to Ashish Larivee, a director of product marketing at Novell.

Continued Support

Even though Novell will no longer ship new releases of its application server, it pledged to continue support for the product, as well as for IBM's WebSphere, BEA Systems Inc.'s WebLogic and Jakarta Tomcat.

"We have been looking at supporting open-source proj-

ects and products wherever it makes sense within our product portfolio, and an application server is pretty much a commoditized part of the platform," Larivee said. "We first investigated trying to open-source our application server, but because of licensing restrictions, we were unable to do so. The next option was to look at the most popular open-source application server, and JBoss was the clear choice."

Novell plans to provide a series of white papers and technical guides to help customers, but the company expects migration issues to be minimal since JBoss is J2EE-compliant.

"This is a good thing for both Novell and JBoss," said Anne Thomas Manes, an analyst at Midvale, Utah-based Burton Group. "It's a waste of time, effort and money for Novell to continue to invest in this commodity J2EE application server technology when there are freely available, high-quality app servers that they can embed for their product instead."

Also at LinuxWorld, Red

Hat announced the availability of its lightweight application server, which is based on the open-source Jonas application server from the ObjectWeb Consortium. Raleigh, N.C.-based Red Hat said it plans to test the application server to ensure that it interoperates with J2EE platforms from BEA, IBM and Oracle Corp.

Red Hat Application Server is tested and supported on all major commercial JVMs, including those from BEA, IBM and Sun, according to the company. Plans also call for it to be tested and certified with leading database management systems, including those from Oracle, IBM and Sybase Inc.

Tom Murphy, an analyst at Meta Group Inc., predicted "a flurry of activity" around open-source application servers such as Red Hat, Novell's releases and others.

"Just like it took the formation of Red Hat to really get Linux going and then the backing of IBM to make corporations comfortable, we are seeing a similar era now for open-source middleware," he said. **48796**

Reporter Todd R. Weiss contributed to this story.

Oracle Gives CRM Another Shot

BY MARC L. SONGINI

Oracle Corp. is counting on the latest revision of its E-Business Suite, aimed largely at improving sales processes, to finally give it the elusive traction it has sought in the CRM market for years.

The company today is expected to announce Oracle CRM 11i.10, an upgrade that includes a revamp of its sales, marketing and partner relationship management modules. The new CRM application is part of an ongoing E-Business Suite upgrade that earlier this month yielded Version 11i.10 of its Supply Chain Management application.

Timed for release as corporations are expected to be willing to once again invest in customer-facing applications,

CRM 11i.10 is designed to enable the alignment of sales activities with company goals, boost the effectiveness of individual salespeople and bolster collaboration between in-house and indirect sales forces, said John Wookey, Oracle's senior vice president of applications development.

Among the new tools in CRM 11i.10 is the Oracle Audience Workbench, which can access data from the Oracle sales and marketing modules and present it in a single screen to help managers identify the best customers to target for upselling or cross-selling.

In addition, managers can now craft compensation packages that reward salespeople who fulfill corporate objectives.

According to Wookey, analytical technology will enable managers to track sales by product or other categories and create a "holistic view" of companywide CRM activities. Users can access sales status information, do historical and predictive analyses, and report on potential deals, Oracle said.

Making Inroads

The cross-selling, analytical and marketing integration enhancements are of particular interest to Affina, a customer service company in Peoria, Ill. Victor Burgess, vice president and general manager of alliances, said the company will be able to offer the upselling and cross-selling technology to its customers as part of its contact center service. Affina

currently runs Oracle's E-Business Suite 11i.9 CRM and application server software.

The CRM 11i.10 release is the latest of several attempts by Oracle to gain share in the CRM market — an effort that so far has yielded few results, said Erin Kinikin, an analyst at Forrester Research Inc.

By building in features that help salespeople save time and make more money, the suite might be appealing enough to ease their historical aversion to CRM software, Kinikin said. However, she noted, "we need to see some customer references and return-on-investment results."

All Oracle CRM 11i.10 modules will be available within the next eight weeks. Pricing per module starts at \$3,995 per user, subject to conditions in Oracle's E-Business Suite pricing schedule. **48800**

NEW PRODUCT

Oracle CRM 11i.10

FEATURES INCLUDE:

- A sales coaching template that captures information for analysis and reporting.
- The ability to pull CRM data from marketing or other departments to help generate personalized sales proposals more quickly.
- A sales tool for managers to map out campaign strategies in a given territory using both direct and external salespeople.
- A partner dashboard that provides access to marketing funds, special pricing and deal log-ins.
- A channel management dashboard that will let executives view key metrics.

New Mexico County Pioneers Courthouse Wi-Fi Service

BY BOB BREWIN

Bernalillo County, N.M., has adopted Wi-Fi technology to support Internet access for judges, lawyers and jurors in its courthouse. The service also provides wireless voice-over-IP phone service for security personnel.

Jim McMillan, principal court technology consultant at the National Center for State Courts in Williamsburg, Va., called Bernalillo county a pioneer in the use of Wi-Fi service and Wi-Fi VoIP phones in courts. McMillan said the Bernalillo courthouse is one of the first in the country to offer free Wi-Fi service to jurors.

Paul Roybal, CIO of the Metropolitan Court in Bernalillo county, which encompasses greater Albuquerque, said the court this month kicked off the second phase of a \$150,000 Wi-Fi deployment that began in February. It will provide both Wi-Fi VoIP and data services throughout the 10-story courthouse. The Wi-Fi network is intended to reduce juror frustration with waiting to be called for cases, Roybal noted.

The network hardware includes two BeaconMaster Layer 3 routers from Chantry Networks Inc. in Waltham, Mass. Once the project is completed, the network will have 65 Chantry BeaconPoint 802.11a/b/g access points, Roybal said.

Addressing Security

The VoIP phone service will replace a dedicated 900-MHz phone system that had trouble operating in some areas of the steel and concrete structure. The VoIP service will also get around a ban on using cell phones in

the courthouse, according to Roybal.

Luc Roy, senior director of product management at Chantry, said the BeaconMaster routers used in the Bernalillo courthouse segregate traffic and subject it to a firewall through virtual private network connections. Each router is capable of supporting 50 VPNs.

Roy said network managers can control access to subnetworks by assigning different sets of Wi-Fi service set identifiers, the header broadcast by an access point. Client devices must use the same SSID as the one broadcast by the access point, and judges, lawyers and jurors will all be assigned different SSIDs in the courthouse.

The network uses two BeaconMaster 1100 routers, which can support up to 100 access points each and are priced at \$22,000 apiece. The BeaconPoint access points cost \$395 each.

Roybal said he has equipped the court security force with 36 NetLink Wi-Fi VoIP phones from SpectraLink Corp. in Boulder, Colo. Ben Guderian, director of marketing at SpectraLink, said the phones cost \$595 each. Although that might seem high compared with the price of basic cell phones, which go for around \$100, Guderian said mobile VoIP users save on monthly costs for airtime.

McMillan said the Bernalillo installation is the beginning of a trend in Wi-Fi deployments at courthouses nationwide. The state of North Carolina plans to install Wi-Fi in all 100 of its courthouses, while New York-based Courtroom Connect has installed fee-based Wi-Fi networks in 21 state and municipal courts. **48737**



WI-FI SERVICE at the Bernalillo county courthouse will let lawyers conduct online research.

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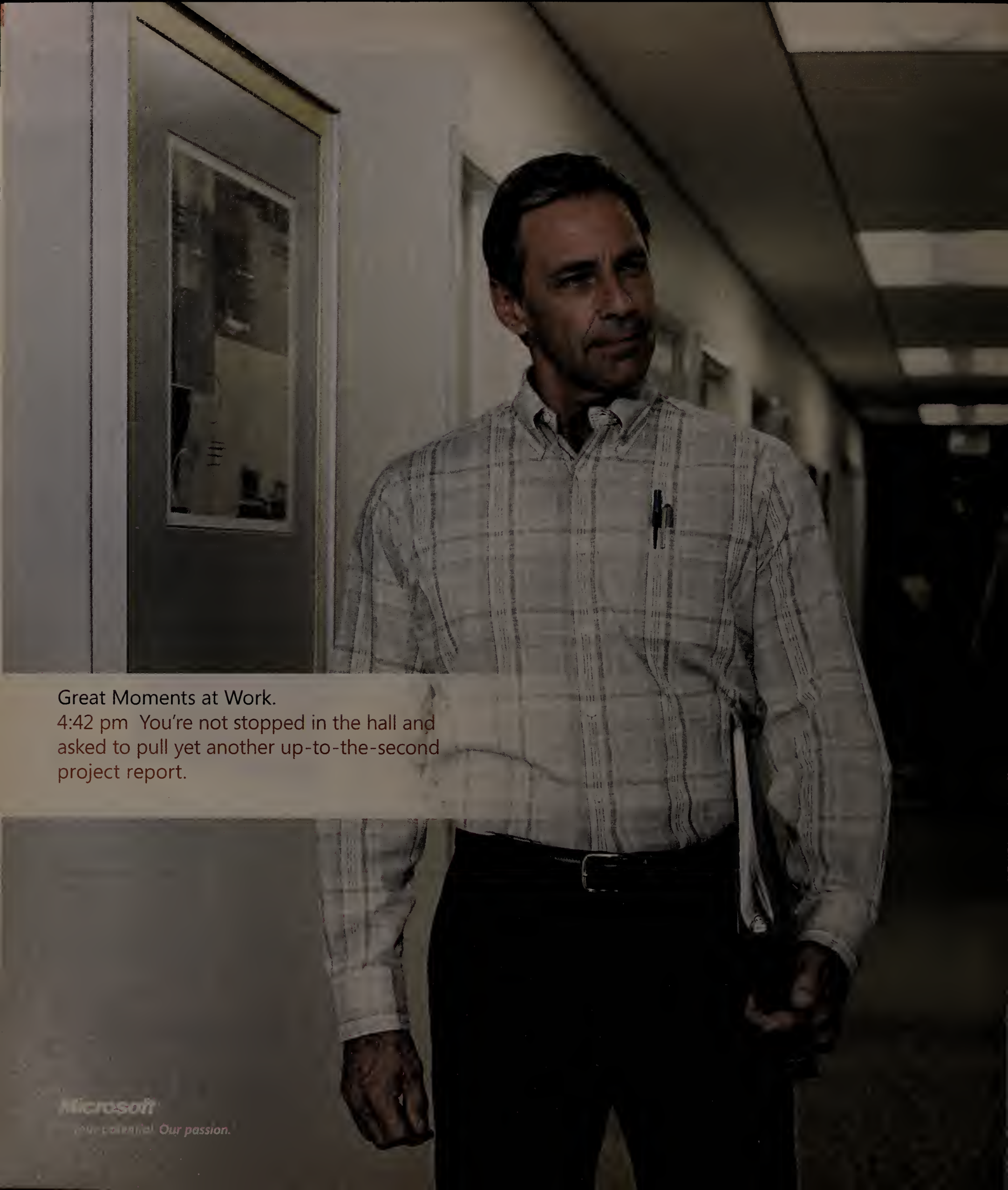
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MARYFRAN JOHNSON

Security Blind Spot

SOME OF OUR READERS objected strongly last week to Dan Verton's front-page story about the potential dangers of sensitive company information posted on corporate

Web sites ["Online Data a Gold Mine for Terrorists," QuickLink 48662]. They felt it was irresponsible to call attention to the problem and accused us of showing poor judgment in identifying specific examples from corporate Web sites.

"Please, spread the fear," one reader sarcastically suggested. "Is this *Computerworld* or Fox News?"

"You do more harm than good," wrote another manager. "If there are people out there that didn't know about it before, they do now!"

"Although it raises some awareness," said a systems engineer, "now you've added some details and hyperlinks that allow the terrorists to see more data. Something to think about."

I certainly agree it's worth thinking about. But I still believe it's far better to recognize potential dangers than to ignore them. The Department of Homeland Security thinks so, too. Amit Yoran, director of the National Cyber Security Division at the DHS, encouraged our reporter to write about this issue. "Not thinking through the security implications of some of the information put online can be a very dangerous mistake," Yoran said. Another senior intelligence official at the DHS gave us a real example of that danger, pointing to the recent capture of an al-Qaeda computer engineer whose laptop contained photographs and floor diagrams of U.S. buildings.

Unfortunately, this story could have been headlined "Online Data Still a Gold Mine for Terrorists," since we called attention to the exact same issue more than two years



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ago ["Web Sites Seen as Terrorist Aids," QuickLink 27059]. In that story, we cited a security audit that turned up startling amounts of sensitive internal information made available on corporate Web sites, such as building plans and schematics, elevator system specs, wireless network details and infrastructure diagrams.

Why on earth does the public Web site for Entergy Corp.'s Indian Point nuclear power plant still post details about its reactor design [QuickLink 48675], including the thickness of the reactor's various layers and the types of steel reinforcement bars? For school science projects?

Not surprisingly, security analysts and consultants lined up in favor of calling attention to such lapses. "I thought the piece on the building plans was great," one security consultant wrote to our reporter.

"This is an area that just does not get considered."

But the issue isn't restricted to corporate entities. One security manager at a technical services company in the Midwest wrote in about a U.S. government Web site that freely distributes a software package that, in his view, could help terrorists plot "a chemical or biological weapons attack." The software is actually intended for emergency response teams, he said, "but after seeing it, I would say it could be used by terrorists quite easily."

The problem, of course, is that most of us think like the good guys, not the bad guys. We don't look at a sharpened pencil on a desk and see a deadly weapon. Who wants to live that way?

There's also an argument to be made that this isn't an IT problem at all. The content of most large company Web sites is usually managed by marketing and communications departments, and they're more worried about presenting a good image than about the implications of posting a photo of the underground parking garage.

So you tell me: If IT and security managers don't pay attention to this corporate security blind spot, who will? ☎ 48782

MICHAEL GARTENBERG

When Mobile, Connectivity Is Everything

IT WOULD BE GREAT to have a unified architecture for mobile digital content, applications and devices, an architecture that would let me link my efforts at work with my content and information at home seamlessly. I could be mobile and still access any critical information that was contextually relative.

Although the unified platform doesn't exist, an emerging crop of portable devices does, thankfully, grant me greater flexibility in synchronization and connectivity. While the PDA started a revolution years ago, the need for disconnected PDAs is rapidly declining. In fact, a few years ago, I predicted that most portable devices sold on the market would have at least two forms of connectivity built in.

That proved to be correct, and today connectivity should be a primary driver when you're looking into mobile device purchases for business use. There are several factors that come into play in making the purchasing decision.

First, you need to decide how many devices you (or your users) want to carry. For most users, it will be no more than three, with two being the sweet spot. Form factor is important as well — there's a huge difference between a device that's truly pocketable and something that needs to go into a case with a laptop. And pay attention to battery life. No matter how small the device is, once the battery goes, it's a brick.

Then focus on the importance of primary and secondary functions. If voice is important, you might want a small, dedicated cell phone that's separate from other functions and therefore always available. If e-mail or messaging is important, make sure a keyboard is available for the device. (A good rule



of thumb when it comes to mobile messaging is that the worst keyboard is better than none at all.) If you need to access other information, make sure the device is compatible with Microsoft Office applications so you can read attachments when on the road.

Finally and most importantly, remember that the key these days is connectivity. For phone-centric devices or PDAs, Bluetooth is a must so you can connect them to other devices or headsets. For e-mail-centric devices, make sure coverage areas match your usage pattern. The best products on the market offer Wi-Fi in addition to WAN or Bluetooth, which is great for connectivity at home, on campus networks and via hot spots on the road. Unless you're sure about where the device will be used, you will want connectivity options that give you more flexibility for staying connected — and in the end, that's what it's all about. A Wi-Fi-only device won't do if there's no network; a GSM/GPRS device might have connectivity problems indoors.

A handful of products meet these criteria well. For two-piece connectivity, a good combo is a small, Bluetooth-enabled cell phone and a Bluetooth PDA. For e-mail centricity, the venerable BlackBerry is a great choice. For all-around PDA functionality with telephony, the Treo 600 is an excellent tool. For flexibility, nothing beats the HP 6300, which combines telephony, GPRS, Wi-Fi and Bluetooth, all in a tiny form factor. There's no one killer device that's right for everyone.

Next month, I'll be taking a close look at some of the best of these devices in a more in-depth review of how well they work for the mobile professional. **48674**

PIMM FOX Technology Not the Answer To Terror

IS TECHNOLOGY going to be able to foil terrorists? It's doubtful. Consider the case of those biometric passports you may have read about a couple of years ago.

In 2002, Congress passed, and President Bush signed, the Enhanced Border Security and Visa Entry Reform Act. One of the features of this slab of legislation is the requirement that 27

foreign governments institute new passports with biometric features that support facial recognition. These 27 nations are participants in the Visa Waiver Program, which lets someone from the U.K., for example, visit the U.S. without a visa.

When this law was passed, the deadline for the newfangled passports was set for Oct. 26 of this year. Although technically U.S. passports don't have to have the new biometric chip, the State Department decided it wouldn't be fair if we demanded that other countries adopt the new passports without us leading the way.

But guess what — Maura Harty, assistant secretary of state for consular affairs, told the Senate Judiciary Committee on June 15 that this scheme is too complicated to be up and running by Halloween. Indeed, there aren't even passports with the special biometric chips available for testing yet.

The U.S. government settled on facial recognition because the International Civil Aviation Organization adopted that standard in May 2003.



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For biometric passports to work, you need globally interoperable, contactless chips. I almost fell out of my airplane seat when I heard that one. *Globally* and *interoperable* shouldn't be allowed in the same sentence, never mind in one chip design.

Harty said the U.S. won't begin receiving large shipments of the 64KB chips for use in passports until next

spring at the earliest. None of the larger countries in the Visa Waiver Program, such as the U.K., Japan, France, Ireland, Italy, Spain and Germany, has started to roll out the new biometric passports, though the U.K. is switching to the biometric system next year, and Japan should be well along by 2006.

As a stopgap measure, visitors who arrive via the Visitor Waiver Program must enroll in the US-VISIT program, which is designed to track the entry and exit of foreigners using electronically scanned fingerprints and photographs.

The State Department has asked Congress to extend the deadline by two years so everyone has more time

to get on the biometric bandwagon. The Judiciary Committee's chairman, Sen. Orrin Hatch (R-Utah), has proposed a one-year extension.

Without shifting this deadline, U.S. embassies and consular offices will be swamped by an estimated 5 million applications for visas. That's a 70% increase in the nonimmigrant visa workload, according to the State Department.

Of course, all of the political blather over using technology to make us more secure is irrelevant. It's worth noting that there's evidence that once these biometric passports are in place, they could easily be thwarted, for example, by a terrorist who got Botox injections just before traveling. Besides, the recent report on the 9/11 suicide attacks makes it clear that poor communication among the FBI, CIA and local law enforcement may have prevented officials from foiling the attacks.

We don't need more technology. We need to learn how to use the technology we have, and we need some common sense. **48705**

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READERS' LETTERS

Pentagon Misuse

MY JOB in the Navy reserves was to administer and operate the Worldwide Port System, which had been developed for the Army based on a manual system ["GAO: Pentagon IT Mismanagement Wastes Billions," QuickLink 48055]. The software did little more than somewhat automate the manual system. Although data entry screens were almost a duplicate of the old paper forms and knowledge of special codes was still required, the system was touted as advanced software to simplify the inventory and material-transfer operations involved in operating a shipping port and warehouse.

I saw something similar in the National Guard. It was difficult for me to use these systems as they were while ignoring my then 15 years of experience in IT, since both systems could have easily been written from scratch using proper database and application design techniques. Instead of trying to duplicate paper-based systems that predate World War II, the Pentagon

should do what every company in the country does — use technology to make its systems more efficient.

Aaron N. Cutshall
Systems analyst,
ELSA LLC, Elwood, Ind.

Paper Forever

MICHAEL GARTENBERG wrote in a recent article ["No Turning Back From Digital Age," QuickLink 48042] that using paper for data storage makes no sense. I'm no Luddite, but I disagree. Many of our editors carry on e-mail correspondence with social, political and literary authors of great stature whose books will be read and lives studied for decades. How do we manage the archives for this correspondence? I can gather up editors' .pst files from Outlook and ship them off to our archive partners at Columbia University, but are they going to be able to help a researcher 20 or 30 years from now import that file into whatever will pass for an e-mail client in the future? Most likely not.

Technology standards change — already, in the switch from Outlook

for Mac OS 9 to the archive file format in Entourage in OS X, the .pst file has been replaced by the incompatible .mbox file for e-mail archiving. The easiest thing to do to ensure that someone can read this correspondence in the future is to get it on paper. Besides, I'll take the glow of a candle over a CRT any day.

Joe Wojak
Senior user analyst,
W.W. Norton & Co., New York

Keep It Competitive

IN A JULY 19 letter ["Apple's Integration Problems," QuickLink 47982], James Kunysz stated, "I personally no longer see a need to support two types of hardware and operating systems on the corporate desktop." Most of the companies I've worked for have recognized the value of a competitive marketplace. Since the early 1980s, it has been common for very large companies to use an Amdahl processor or two in addition to their IBM models to apply competitive pressure to Big Blue. I have seen companies install software products that they had lit-

tle or no intention of using in order to get significant price concessions from their vendor of choice. Similarly, even with only a 3% market share, Apple's presence in the marketplace provides a crucial counterbalance to Microsoft. But for some reason, Kunysz's reasoning seems to be widespread when it comes to the desktop. When are people going to realize that Microsoft is a monopoly made by them and that it will continue to be until they (not the government) do something about it?

Cathy Taddei
Portland, Ore.

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Schwan Food's Glenn Bader wanted customers' personalized experiences with the company to extend to its Web site.

STEVEN WEWERKA

Getting Personal [AGAIN]

Personalization technologies didn't live up to their hype during the dot-com boom, but some companies are taking another look. **BY KYM GILHOOLY**

WHEN MARVIN SCHWAN decided to bolster his family's dairy business by selling ice cream door to door more than 50 years ago, he quickly developed relationships with the customers on his route. He must have been doing something right: Since then, privately held The Schwan Food Co. has grown into a frozen-good giant, with 5 million customers in 48 states and estimated revenue of \$4 billion. It sells into homes through its Schwan's Home Service Inc. division as well as into retail locations.

When Schwan's decided a few years ago to leverage the Web as a key customer sales channel, executives wanted to translate the personalized experience customers get in their homes and through the call center into the online experience, according to Glenn Bader, director of e-commerce and emerging channels at the Marshall, Minn.-based company. Doing so required, among other efforts, centralizing data from the customer master file and other sources in a dedicated data mart and finding personalization software that could recommend an individualized mix of products and offer personalized incentives to site visitors. For its personalization, campaign management and marketing analytics needs, Schwan's chose Interaction Advisor from San Mateo, Calif.-based E.piphany Inc.

Personalization technologies came on the scene to much fanfare during the dot-com craze, but for a number of reasons, they didn't live up to the hype. Based on concepts such as one-to-one marketing, personalization tried to treat all customers as unique, but the numerous business rules required to do so were difficult to maintain and greatly affected online system performance. Moreover, many businesses found that the majority of their customers simply weren't different enough to justify the expenditures.

Nonetheless, many large companies today are seeing significant returns from personalized marketing, sales and customer service efforts through CRM strategies that combine a host of factors. They use appropriate personalization algorithms and sophisticated analytics for understanding behavior and focus on a smaller group of customers — typically high-value, frequent customers.

For example, Harrah's Entertainment Inc. in Las Vegas has bolstered highly segmented customer data used for its casino customer base with a personalization strategy for its premier 100,000 customers — who generate 30% of its revenue. Harrah's uses the Clienteling product from Blue Martini Software Inc. in San Mateo, Calif., to implement the program.

Daily or even more frequently, managers establish contact priorities for Harrah's service-oriented hosts by running Cognos queries against a Teradata warehouse to identify appropriate segments and then feeding results into the Clienteling data mart. Blue Martini's personalization engine generates contact names and reward offers appropriate to the current promotional campaign of Harrah's. For example, if an event on a certain night isn't filled, hosts can tar-

CONSUMERS WANT PERSONALIZED CONTENT

U.S. Internet users interested in personalized content

Age	Percentage of Respondents
18-24	87%
25-34	82%
35-49	76%
50+	77%

U.S. Internet users who are willing to provide demographic data in exchange for personalized content

Age	% of Respondents
18-34	63%
35+	49%

Base: 673 respondents surveyed in May 2004
SOURCE: CHOICESTREAM INC., CAMBRIDGE, MASS.

get specific customers and make a personalized offer based on behavior and preferences.

"We're able to be highly customized with Blue Martini's [personalization engine]. Managers dictate more of the prioritization and are able to generate the right names," says David Norton, senior vice president of relationship marketing. Thanks to this effort, says Norton, Harrah's has increased revenue from its premier customer segment by 28% over the past two years, while its other segments have experienced modest growth rates.

PERFORMANCE ANXIETY

When Schwan developed its personalization strategy, according to Bader, the company paid attention to factors that have historically caused failures in such efforts: performance problems, databases with conflicting customer data, lack of integration among channels and unreliable personalization techniques.

Because Schwan had deployed the analytics and campaign management components of the E.piphany platform before the personalization, the company had already done a significant amount of work on its data mart. Database work was greatly eased by the fact that field reps had been using DOS-based handhelds since the 1980s that fed a customer master file, from which they populated the data mart, says Bader.

Also key, says Bader, was making personalization contextually relevant, an area where efforts often fall short. Doing so requires personalization strategies that don't rely on just one technique such as collaborative filtering or rules-based algorithms but combines them to, for example, make a purchase recommendation. While exploring other food sites to prepare for Schwan's personalization effort, Bader had a personalization engine recommend an onion and a bottle of wine for a family dinner, and he was determined to avoid similar problems.

"If you're going to use [collaborative filtering] to upsell, there have to be business rules that go around it for specific situations," he says. Bader rejected pure rules-based software as well as pure collaborative filtering platforms "because they didn't have a lot of ability to build rules around them." Ultimately, Schwan added business-specific rules within the E.piphany system, and those that the system couldn't accommodate were built outside of it.

As for the site's performance, "we were obviously concerned about tapping into a technology where there were questions about whether it would scale or perform, particularly with our traffic and sales volume," says Bader. But the cache-driven nature of E.piphany's personalization engine has thus far alleviated concerns. "There's an element of real time where [the technology] captures new information as to where customers are going, but when it's making a call into the personalization engine itself, it's not querying to figure things out — it's a cache-driven operation," he says.

The personalization engine takes into account elements such as a user's purchase history, pages visited, demographic data and profile to make recommendations. Not only has the personalization effort improved Schwan's upsell rates at online checkout, but it has also improved overall conversion rates and increased order frequency, says Bader.

Performance was also a concern for A&E Television Networks when it decided to better target customers by offering separate online stores for its A&E Television, History Channel and Biography Channel merchandise, says So Young Park, director of e-commerce at the New York-based company.

A&E abandoned its earlier e-commerce platform, in part because it couldn't scale, and rearchitected its site — a tribranded effort behind which sit the separate storefronts — based on Art Technology Group Inc.'s Commerce Suite and its Dynamo personalization technology. Now, depending on preferences defined during a registration process and based on past behavior, customers get individualized content and store promotions specific to each channel. If they have opted to receive e-mail content, they receive targeted messages based on their profiles.

Due to limited IT resources, A&E opted to use ATG's packaged personalization "scenarios" — rules-based "if-then" processes that deliver recommendations based on user interests, history and so on. The company uses SiteCatalyst Web analytics from Orem, Utah-based Omniture Inc. to analyze how its Web page tags are working.

A&E's personalization strategy has helped it brand the individual stores, which together have 5,500 products. "Among other things, it's improved conversion up to 50%. While our earlier [combined] storefront might have converted 3% of visitors, our individually branded storefronts convert anywhere from 5% to 8%. It's helped obviously from a merchandising and sales perspective, but also branding," says Park.

Before a company undertakes any personalization effort, say experts, they've got to determine the value to customers. Ultimately, if you give appropriate control to customers, they're much more likely to remain loyal, says Chris Selland, an analyst at Aberdeen Group Inc.

"Customers should be managing you in a relation-

ship, rather than you managing them," Selland says. "Personalization used to be all about marketing and pushing offers in people's faces. Now it's almost become personalization as a customer service tool rather than a marketing tool. It's about establishing preferences as to how and what customers like to buy and how they want to be communicated with."

Q 48557

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The Privacy Dilemma

Personalization is only as good as the data it's based on: The more you have, and the better it is, the more relevant the personalized interaction. The problem is, privacy concerns have customers increasingly shy about sharing. This, coupled with legislative handcuffs such as the "do not call" initiative, means businesses have to figure out ways to maximize each interaction with a customer and then securely develop the relationship.

"Companies have to avoid the 'marketing gone wild' mentality, as every interaction is a reflection on brand," says analyst Elana Anderson at Forrester Research Inc. She recommends that they focus on building customer relationships based on proactive service, leveraging personalization technologies on inbound channels to maximize the interaction when a customer makes contact. "It's the reason marketing should own the contact center, if messages are done right, they're service-oriented instead of the hard sell," she says.

At Mahwah, N.J.-based Sharp Electronics Corp., privacy policies dictate that the company doesn't share customer data and that it never sends unsolicited e-mail to existing customers, according to Fred Krazeise, vice president of marketing and planning decisions. As part of its acquisition strategy, however, Sharp does send e-mails asking recipients for permission to establish relationships.

For its part, Schwan Food makes it a policy not to collect data it won't use, both to streamline operations and because the company doesn't want to intimidate customers.

"Have a purpose for collecting personal data, and always honor opt-out requests," says Glenn Bader, Schwan's director of e-commerce and emerging channels.

According to Gartner Inc. analyst Adam Sarner, privacy legislation can actually be a boon to personalization initiatives — at least in the case of "explicit" personalization, in which a company collects data with the customer's permission, with the promise that it will use the data to only make relevant contact.

"Every company should have user profiles that allow customers to set preferences: when they want to be contacted, how often and about what. That's explicit personalization, and it can be extremely powerful," says Sarner. While the sit-down nature of the Web offers the best interface for creating user profiles, the data should be populated across databases that touch every relevant contact point, whether it be through e-mail or call center or at point of sale. "The trick is not just leave it on the Web but make it part of the complete user profile," Sarner says.

— Kym Gilhooly

BRIEFS

Autodesk Updates Design Software

Autodesk Inc. in San Rafael, Calif., has announced a new release of Autodesk Buzzsaw, design software that helps keep building, manufacturing and infrastructure projects on time and on budget. Buzzsaw 6, available now, includes project portfolio management reports on schedule, budget and project status, as well as a dashboard with key performance indicators for all projects that are under way, Autodesk said. Pricing starts at \$30,000.

Veritas Upgrades Replication App

Veritas Software Corp. this month announced Storage Replicator 3.0, software aimed at protecting remote office data through real-time data replication. Storage Replicator allows organizations to centralize backup without disrupting normal server operations. It does that by replicating remote office data over an IP connection, either continuously or on a scheduled basis, to a central location where it can be reliably backed up and stored, according to Veritas. The software is available now and costs \$1,495 for Windows Server and Advanced Server.

VMX Tool Monitors Linux, Unix Clients

Vintela Inc. in Lindon, Utah, has announced that new Vintela Management Extensions 1.0 are now available. The extensions allow Unix, Linux and Mac OS X clients to be managed and monitored natively from within Microsoft Systems Management Server 2003, according to Vintela. VMX 1.0 is an administration console snap-in and client for SMS that solves multiplatform administration and management problems, the company said. VMX starts at \$1,995, including unlimited administration workstations and five managed workstation licenses.

ROBERT L. MITCHELL

Wireless World Needs a Directory

THE OTHER DAY, I needed to reach my elderly parents, who were traveling, on an urgent matter. Not to worry, I thought: They have a cell phone. There was just one tiny problem: They had recently

switched carriers and been issued a new phone and telephone number. I couldn't get that number to save my life, which is too bad, since sometimes a phone call is a life-and-death matter.

Today, there is no public nationwide directory of cell phone numbers, no national 411 service and no white pages that include everyone's cell numbers. Even if you know the person's cellular carrier, it won't help. No matter what you say, the customer service representative won't release the number. I said everything, tried every angle, but to no avail.

This situation might have made sense in 1993, when the 16 million cell phones in use were treated like handy accessories. In 2004, however, the industry has some 160 million subscribers, according to the Cellular Telecommunications & Internet Association (CTIA), and an increasing number of those customers use the cell phone as their primary communications medium. Today, not having a public mechanism to look up consumer and business cell phone numbers is just plain ridiculous.

Like wireline customers, wireless users have phones. They have phone numbers. But since they choose wireless as the underlying medium, the game changes. Their names just disappear from phone books, online white pages and national calling directories.

The technology to create a nationwide cellular phone number database



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has always been available. The problem is that the competitive, fragmented wireless industry, with its Byzantine service contract and billing models and a general sense of paranoia, has conspired to prevent such a directory from being created. The thinking is, Who wants to receive telemarketing calls when you're paying by the minute for incoming calls?

In a competitive market, what carrier wants to share its customer list with other vendors for the sake of creating a directory?

Now the industry is finally pushing ahead to create a nationwide directory-assistance database. It will be less inclusive than traditional directories, limited to listing only those who ask to be included. There will be no charge to be listed, and vendors have pledged not to sell or publish the data. The effort is a good example of how to use technology to give people choices.

But you wouldn't know that, given all the ruckus. Privacy advocates, conspiracy theorists and folks who just don't like the idea of carriers possibly profiting by distributing wireless user data are objecting. It's not enough that they don't need to do anything to keep their own names out of the directory — they don't want yours in one, either.

Surprisingly, one of the most vocal opponents is Verizon Wireless. CEO Denny Strigl called the initiative, led by the CTIA and a consortium of five major wireless carriers, a "dumb idea."

He claims to be defending his customers' privacy and says that users don't want such a directory. This argument is a bit disingenuous, to say the least. Verizon already publishes and shares my wired phone number and address information. If I don't like it, I have to pay them to stop the practice by making my number unlisted. But for some reason, wireless should be a special case, they argue.

Some businesses don't like the idea of having employee phone numbers appear in a 411 database, fearing telemarketing calls. But businesses can protect those wireless phones just as they would any wired line. They can choose not to list the number.

Every cell phone today has Caller ID to screen calls. Call blocking is available. And users can demand new features such as one that allows only calls on an approved phone list through while blocking others or routing them to voice mail. Or users can turn the damned things off when they're driving or don't want to be interrupted. Certainly, plenty of technical solutions exist if the industry wants to implement them.

It's time to stop thinking about wireless as the special case and treat it as just another phone. The fact is, it's just another option in a world of telephony technologies that are rapidly converging. Verizon's own move toward converged service offerings that mix local, long-distance and wireless plans in a single package is evidence of this trend. Not to offer users a choice is to do them a disservice. Instead of telling customers what they want, telephony service providers should offer nationwide 411 service and let users decide for themselves. ☎ 48752

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10 mistakes that can suck the funds out of your IT project budget – and how to avoid them. By Mary Brandel

IT PROJECTS ARE NOTORIOUS for being over budget. In fact, Gopal Kapur, president of the Center for Project Management in San Ramon, Calif., estimates that 77% of projects blow their budgets, with an average cost overrun of 169%. As for the remaining 23%, Kapur doesn't have a lot of faith in those project managers. "They just lie about it," he says.

Perhaps if project managers knew where the biggest money wasters were, these statistics would improve. With that in mind, we spoke with experienced project managers and other experts to find out where the black holes of project management are and how to avoid them.

1 Scope creep. It can begin early, at the requirements definition stage. "People say, 'We're spending the time and money anyway, let's add

this and this,'" says Mark Reilley, director of IT at the Corporation for Public Broadcasting in Washington. "This expands the scope way beyond what you can accomplish or really need."

Even well-planned projects expand up to 2% on their own each month throughout a project's duration, says Capers Jones, founder and chief scientist of Software Productivity Research LLC, a consultancy in Marlboro, Mass. One reason is "technical gold-plating," explains Gregory Fouquet, a consultant at Ouellette & Associates, a consulting firm in Bedford, N.H. "It's where well-intentioned programmers add features and functionality that haven't been specified but are neat or slick," he says. "It eats away at productivity and introduces difficulties in testing." **SOLUTION:** Keep to core functionality by defining requirements as "must



ANASTASIA VASILAKIS

BUDGETARY Black Holes

haves," "should haves" and "nice to haves." To keep developers in check, Fouquet advises rigorously specifying must-have requirements and tracking them through the development process.

"This is trickier for project managers who come from the business side and don't understand technical complexities," he says. For these managers, enlist the help of a good, credible IT person. Reilley also suggests lowering user expectations by releasing something small in scope that you can add to later. "Usually Version 1 is the prototype, and when users see it, it's good enough," he says.

2 Building a too-sophisticated GUI too early in the project. Most graphical user interfaces change dramatically from the requirements definition stage to the final release, says Johanna Rothman, president of Rothman Consulting Group Inc. in Arlington, Mass. And yet developers are always tempted to perfect the GUI in electronic form at early stages in the project. **SOLUTION: Start with low-tech GUI prototypes.** Rothman suggests representing the user interface with either a paper prototype, using colored pens and yellow stickies, or through a drawing program or software such as Photoshop. "If you start off with an electronic representation of the GUI, it's incredibly expensive," she says. Don't do it until you've frozen the final plan.

3 Lack of negotiation skills. Few project managers get formal education in how to negotiate the best prices for software or contract labor. "They are like lambs waiting to be fleeced," Kapur says. **SOLUTION: Develop basic skills.** At the Center for Project Management, Kapur asks project managers to give him an offer for a new and a used car. He checks to see if they use the Web to research accident histories and Kelley Blue Book values, as well as how many dealers they contact and how much they find out about financing terms. "I like to see the process they've gone through, and most have just not learned it," he says.

Negotiation skills are also communication skills. For instance, after you've made an offer, Kapur says, don't say a word. "Instead, [silently] count or recite the names of people you know," he says. "Most people can't handle that." Kapur also suggests that project managers spend a week in the procurement department to learn how negotiations are handled. For instance, purchasing software at the last minute can be

three to five times more expensive than buying it in advance.

4 Not understanding project finance, which is different from project accounting. "People just don't understand what money means — like if I add money to this project, another project can't be done," Kapur says. **SOLUTION: A short course in financial concepts and terminology.** Particularly for complex projects that last longer than six months, Kapur advises project managers to educate themselves and their teams on concepts such as internal rate of return and net present value. [QuickLink 46832] "We're not making people experts, but they should have enough knowledge to recognize both the problem and the solution," he says.

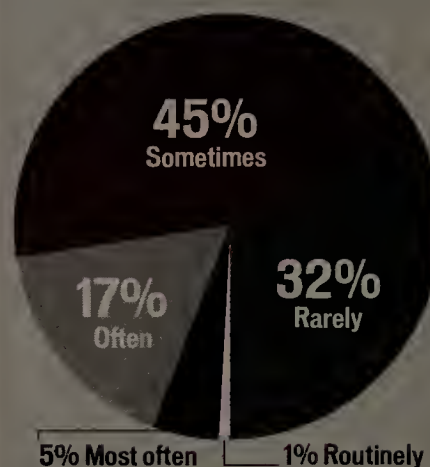
5 Implementing large, big-bang projects. Research shows that per-person productivity decreases as the project size goes up, says William Roetzheim, founder of Cost Xpert Group Inc. in Rancho San Diego, Calif. Additional communication overhead, more formal requirements, more detailed design and the increased number of meetings all add expense. With small projects, Roetzheim says, the time spent implementing the project is 60% of the total versus 8% to 10% on very large projects. "The rest of the time is spent on coordinating, communicating and additional testing," he says. **SOLUTION: Break up projects into smaller, more manageable pieces.** Studies have shown a correlation between high failure rates and large projects, Roetzheim says, but smaller projects are also more cost-effective.

6 Overtesting. We've all heard of analysis paralysis. Reilley suggests that there's also a phenomenon called testing paralysis. "Maybe it's because you've had a bad experience in the past with bugs popping up at the last moment, so you keep testing and testing," he says. Or developers could just be playing with fonts to impress users. The result: overshot deadlines and a waste of resources. **SOLUTION: Accept it: There are going to be bugs.** At some point, you have to say, "Enough is enough," Reilley says. Tell the users that there will be bugs and that the team will work them out. Shoot for 80% perfection, not 100%.

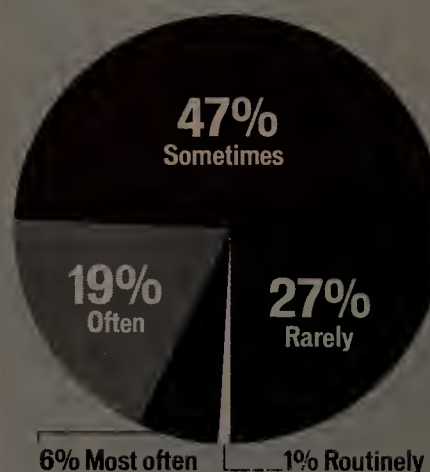
7 Duplicate or overlapping tasks. Particularly in large, dispersed companies with no central IT department, you might not know that

CLUELESS COSTING

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Do your project managers have the appropriate skills to develop accurate estimates?



Base: 198 individuals representing 148 corporations

you could borrow ideas or perhaps even a system from another group that already addressed the same challenge you're facing. **SOLUTION: A searchable project library.** Kapur suggests building a simple word-processor-based system that tracks all projects undertaken in the company, with standard naming conventions and keyword searches.

8 Poor estimating. If costs and schedules aren't well understood in the beginning of the project, when problems arise, it's often too late to reallocate IT resources effectively, Roetzheim says. The worst-case scenario is when a manager realizes halfway into a project that it's behind schedule, and he throws more developers or testers on the job, Rothman says. These latecomers don't understand the problems or how the

application works, so they can't come up to speed quickly. "That's completely a waste of money," she says.

SOLUTION: Cut your losses, and next time, use an estimating tool. The best thing to do when you realize that you didn't estimate resources properly, Rothman says, is to figure out the minimum requirements for finishing the current project and immediately begin planning another project in which you can use your money more effectively. Roetzheim also suggests estimating tools as a means to predict costs and schedules.

9 Lack of cost-to-date and estimate-to-complete data. Too often, team members are completely unaware of whether they're on track with the project budget. At Comdex one year, Kapur asked 160 people in one of his sessions to tell the people seated next to them what their project budgets were and the costs to date, rounded to the nearest thousand dollars. Only 7% were able to do it. **SOLUTION: Develop and monitor cost vital-sign thresholds.** Kapur uses a process where the sponsor and the project manager jointly define cost thresholds. He also recommends telling the sponsor that cost overruns will come out of his own budget or even his paycheck as a wake-up call to track costs.

10 The project should never have been authorized. Projects can get assigned that have little business justification or just don't pass the "smell test," as Ouellette's Fouquet puts it. How do you avoid setting something in motion that's destined to be a true money pit? **SOLUTION: Forget the politics; stop the project.** At the very least, says Reilley, "everyone should be able to answer, 'The purpose of the system is blank.' If you can't describe it in a few words, maybe your focus is too broad."

It's the project manager's obligation to validate a project's legitimacy, Fouquet says. "It's what distinguishes a professional project manager from a hack," he adds. For instance, if you realize halfway through the project that there's no business-side commitment to a training plan, stop the project, advises Bob Benson, a senior consultant at Cutter Consortium in Arlington, Mass. Adds Benson, "Project managers have to be willing to call it bad news when it's bad." **Q 48381**

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EVENTS

Oracle User Group

■ Sept. 21, New York
Sponsor: New York Oracle Users Group Inc.

New York Metro Area Oracle User Group Day includes database administrator, developer, application and workshop tracks. Topics include performance optimization, CRM, self-service modules, Web applications and upgrading. More information: www.nyoug.org

Emerging Technologies

■ Sept. 29-30,
Cambridge, Mass.

Sponsor: *Technology Review*
The 2nd Annual Emerging Technologies Conference at MIT showcases technologies that are poised to make a dramatic impact on the world. Topics include the pipeline problem, nanotechnology and energy, next-generation search, synthetic biology and the tech job drain. More information: www.trec.com

Network Security

■ Sept. 28-Oct. 4,
Las Vegas
Sponsor: SANS Institute

Network Security Conference 2004 offers instructional training and security certifications. Tracks include boot camps; intrusion detection; hacker techniques; securing Windows, Unix and Linux; auditing networks, perimeters and systems; system forensics; and secure communications. More information: www.sans.org/ns2004

Data Center World

■ Oct. 3-6, Atlanta
Sponsor: AFCOM

Data Center World offers tutorials and educational sessions on data center management, facilities, best practices and contingency planning. Topics include security; managed storage services; threats, viruses and worms; utility computing; and ultra-high-density racks and blade servers. More information: www.afcom.com

BARBARA GOMOLSKI

Summer Reading

I STRUGGLED TO FIND a meaningful topic this month, which is unusual for me. Then it occurred to me: It's summer, and I've been on vacation. That explains why my mind is less focused on IT management topics and more focused on summer reading. Since we're in the summer doldrums, I thought I'd have a little fun. (I promise to return to the serious business of IT management next month.) I've created a summer reading list that only an IT person could appreciate. Unfortunately, this is a book list we aren't likely to see anytime soon.

Rich IT Guy, Poor IT Guy. Forget what your father told you. Those of us who choose careers in IT rarely get rich doing it. If it's wealth you're looking for, check out another title: *Bringing Down the House: The Inside Story of Six MIT Students Who Took Vegas for Millions*, by Ben Mezrich (Free Press, 2003).

The Da Vinci Coder. A Harvard professor and amateur programmer stumbles on something even more elusive than the Holy Grail when he manages to effectively block spam from his Outlook in-box while on vacation in Paris. Follow the twists and turns as our indomitable hero encounters unexpected and deadly resistance from a cadre of computer industry executives. These IT industry titans, it turns out, will go to any length to keep their secrets intact.

Seven Habits of Highly Sleazy IT Salespeople. While the last person you probably want to think about on your summer vacation is an IT salesperson, this book is worth your time. The bait-and-switch, the hyperexaggeration, the



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high-pressure sale and, of course, the blatant lie are all covered in this must-read. Learn how to recognize some of the worst behavior you've ever encountered from some of the best-looking and best-dressed people you will ever meet.

The One-Minute Programmer Analyst. Sure, it would be great to spend hours listening to your business management's requests, needs and ideas. But

who has that kind of time? This classic handbook will show you how you can become more popular with your co-workers while significantly reducing the amount of time you spend actually listening to them. Guaranteed to make you more productive at your job, so you can move on to what's really important: surfing the Web at work.

Who Moved My Cubicle? How to stay flexible and happy in a world where your cubicle — and your job — are likely to wind up overseas. This is part of a series that includes the wildly successful *Who Moved My Call Center?*

Heads Down: How to Avoid the Arrival of New Management. While I would be the last person to "dis" the heads-up approach to career management, there is a real art to keeping one's head down. This quick-moving narrative is an IT person's guide to detaching, disengaging and simply avoiding the interaction involved in management upheaval. The book's central theme is spot on: Why look up? In six months, there will be a new leader and a new strategy anyway.

R Is for Reorg. Our favorite sleuth is at it again. This time, she's chasing after the genius who thought up the latest IT management shake-up. This well-meaning strategist has mysteriously disappeared, along with a whole bunch of the company's money. The problem is that nobody noticed the disappearance or seems to care. Can a woman who drives an old car, eats at McDonald's and uses common sense outwit a savvy management theorist? You betcha.

The Care and Feeding of Users. Your relationship with users is in bad shape, and guess what — it's pretty much all your fault. This book will make you feel guilty, undeserving and incompetent. However, I am confident that by Chapter 5, you will have your priorities in order and everybody will like you again.

The South Beach Programmer's Diet. You may not lose weight on this diet rich in pizza, late-night snacks and full-throttle soft drinks, but your productivity is guaranteed to soar (at least for an hour a day). Includes a recipe book of microwave favorites and a sticker book so you can label your goodies in the company fridge. **48386**

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KNOWLEDGE CENTER WEB SERVICES

08.16.04

OPINION

Blurry Web Services

XML is terrific. It's sliced bread on stilts, says columnist Mark Hall. So, why is it so slow? And why can't it deal with opaque data? **PAGE 41**

Message Received?

Companies that require a high degree of reliability from Web services are learning to customize their own coding and build in layers of redundancy. **PAGE 36**

Trouble in Transit

The same design that lets users easily exchange data with Web services also opens holes for hackers. Companies are finding that safeguarding that data exchange is complicated. **PAGE 37**



EDITOR'S NOTE

LAST YEAR, we boldly predicted a Web services tsunami [QuickLink 38153], with XML and SOAP changing a wide swath of IT development. OK, so it's really more like a rushing river than a tidal wave. But the river is still swelling. A recent IDC survey of 197 IT managers shows that about a third of the respondents have completed one or more Web services projects, and more than a third are either evaluating the technology or doing a pilot project. Much of the activity involves employee portals, e-commerce, back-office applications and even mission-critical work, IDC says.

But a tsunami it's not. Why? As usual, the technology is more difficult to implement than the vendors would have you believe. Pilot projects aren't so bad, but even well-funded adopters in the financial services industry have found it tricky to come up with a service-oriented architecture (SOA) for the whole company. So we're taking a more sober look this year. Our first story is about the challenges of SOA granularity, repositories and governance (page 34).

IDC says the top barriers to Web services adoption are a simple lack of money and a not-so-simple lack of security. We can't help you with the budget, but we do have an update on the security issues (page 37). We also cover the topic of message reliability, which doesn't rank as a burning issue yet, but IDC says it will become one as the volume, scale and complexity of projects grow (page 36). **Q 48317**

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For news and advice about Web services and other development topics, see our Development Knowledge Center at:

 **QuickLink k1100**
computerworld.com

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Web Services Hurdles

SPECIAL REPORT

Developing a service-oriented architecture is full of challenges, such as governance, security and reliability.



You could have hundreds of Web services. Here's how to make sure you can organize, catalog, find and reuse them. By Carol Sliwa

DANSKE BANK A/S's trailblazing work to build a service-oriented architecture had gotten so advanced that it exposed more than 1,000 services from its mainframes and application servers. But the Copenhagen-based bank found itself in a frustrating predicament.

"We couldn't find them," says Claus Torp, the company's chief architect.

The problem threatened to wipe out one of the main benefits of service-oriented architectures (SOA) — reuse. So Danske set about revising its concept of a service, refining its repository and establishing a governance process to enforce best practices.

The result was a collection of 140 services that is far more manageable.

An in-depth look at several SOA pioneers shows that the steps Danske Bank took are key to a company's ability to reuse code, build applications with greater speed and efficiency — and ultimately save money.

But it's not easy, and the implementation sequence is important. Sun Microsystems Inc., for instance, built a registry and set up an architecture review board. But the IT department is just now circling back to do a closer examination of Sun's 80 to 100 Web services.

Karen Casella, an IT director at Sun, recommends that a company starting down the SOA path first look at its business requirements and identify which Web services are needed. "We learned the hard way," she says. "We put some of the infrastructure in place before we completely understood what we needed to have in play."

The Services

Companies need to figure out which business processes can be turned into services, carefully design and define the services and distinguish them from components.

When Danske Bank began building standard interfaces to expose its legacy programs, it defined a service as "one function." Now it describes a service at a higher level, as a logical grouping of functionality and data, such as "customer" or "account."

The company's 140 services are each composed of about 10 "operations," or components, that are essentially more granular services. There are currently more than 1,365 operations. Danske expects to eventually have 250 services.

How well a company can break down its business processes and application functions into services will determine the level of flexibility and reuse it gets, Torp says.

Managing the Building Blocks

Danske uses modeling tools to develop logical maps of the functional building blocks and business processes. Then it matches the business processes to the services to make sure it has solved the right problem.

"A lot of doing service-oriented development is making sure you can run different business processes on top of the same service building blocks," says Torp. "If you want to be effective, you have to make sure there is only one place to do the same function."

Cendant Corp.'s Travel Distribution Services division spends a considerable amount of time determining the optimal granularity of its services and service components, according to Chief Technology Officer Robert Wiseman. A service is something that can be called externally through Cendant's business domain model, dubbed Rosetta Stone. A service component, such as logging, is called only internally.

So a "get hotel" service might call several low-level services, such as a latitude/longitude "destination finder" that the company makes available to customers. But Cendant's currency converter is a component, since it currently isn't exposed to customers.

Cendant expects an ongoing project to extract components from monolithic applications to have a big payoff, Wiseman says. For instance, passenger name record (PNR) is a basic unit of data used by booking engines and global distribution systems such as Cendant's Galileo. By making "Super PNR" available as a service, the IT department won't have to maintain six or seven instances of PNR in different applications.

The Hartford Financial Services Group Inc. built pockets of Web and other services over three years ago, but its enterprise-scale SOA work didn't start until 18 months ago.

A good candidate for an enterprise service is one that two or more applications need, says Benjamin Moreland, manager of application infrastructure delivery at the Connecticut-based insurance company. "But not everything should be a service," Moreland warns, noting the potential performance hit from exposing services.

Establishing the Registry

Vendors may have expected Internet-based registries based on the Universal Description, Discovery and Integration (UDDI) standard to spread like wildfire. But early SOA adopters care more about internal registries.

That doesn't mean UDDI is dead, though. UDDI was so important to

Four Challenges

The development of service-oriented applications requires the following steps:

1 UNDERSTANDING which processes can be turned into services.

2 BUILDING a foundry of application processes. This will come increasingly from business applications that are designed as a set of services.

3 ESTABLISHING the granularity of services at the right level to ensure that services are effectively reusable. Too much granularity makes

services too specific to be used; too little granularity makes them too general to be used.

4 FOSTERING a reuse culture is essential to consistent, repeatable success in capturing and using business processes. It enables an organization to deliver processes as a well-defined set of services and to make those services easily available to developers.

SOURCE: DARYL PLUMMER, ANALYST, GARTNER INC., STAMFORD, CONN.

The Hartford that it chose its registry based on the product's conformance to UDDI 3.0. (Officials declined to name the product due to a company policy against endorsing vendors.) The registry includes metadata describing the services and the means to connect to services via particular transports.

But the UDDI registry isn't meant for everything. Departments continue to maintain local registries for some services they create, because The Hartford is selective about what goes into its enterprise registry.

"We don't want to create a junk drawer of services," says Moreland. "What we feel should be in the enterprise UDDI are services that will give us leverage and flexibility across the enterprise."

Providence Health System uses the Infravio Inc. management framework for its service library, and much to the surprise of company skeptics, its developers are actually reusing services, now that they can find the Web Services Description Language (WSDL) files defining the interfaces.

"We commonly refer to this as 'Google-izing' Web services," says Michael Reagin, Providence Health's Portland, Ore.-based director of research and development. "They can reuse services with minor modifications in a couple of hours. People are more productive. Everyone's happy."

Providence Health's greater concern these days is managing its growing number of Web services and SOA framework from an operational standpoint. The company has close to 50 composite services, each one comprising one to 20 more granular sub-services.

Early adopters that couldn't find a registry to suit their needs built their

own. Danske Bank maintains separate repositories for components from its mainframes and J2EE- and Microsoft .Net-based application servers. The repositories replicate between each other, forming one logical repository that essentially is a superset of a UDDI registry, adding operational parameters for functions such as load balancing, says CIO Peter Schleidt. A service integrator agent dynamically selects the most efficient way to call a service, using SOAP over HTTP or more efficient, proprietary protocols.

Danske also has a structured library for its services and their corresponding interfaces. The library also houses information about the relationships between its functional and process models. There's even a librarian that developers can call for help. But the library didn't launch until a year ago — "a lot later than we should have been doing that," Schleidt says.

Governance

When push comes to shove, a governance body can help a company stick to its SOA principles. Danske Bank has steering committees in 18 different business areas for product, process and IT development. But when business managers are anxious to beat the competition, they're sometimes tempted to forgo the generic SOA approach if it takes longer to complete.

"You need a governance process where you can handle situations like that," says Schleidt. "We always have the time to change things afterwards, so why not try to turn it around and do it right the first time?"

The quick-hit approach can have long-term consequences. Danske now has two personalization engines, four interactive customer communication services and four payment-

handling applications, Torp says.

Two years ago, The Hartford formed a central group called the Property and Casualty Architects Collective to examine how it would adopt a SOA across the enterprise. The group put together a reference architecture outlining recommended approaches, practices and products to be used in a particular context.

"It's about shared architectural thought and reuse of thought processes. That's where the hard work and value is," says James McGovern, an enterprise architect at The Hartford.

A separate application infrastructure delivery group is responsible for selecting and implementing the management platform, business process engine and UDDI registry, as well as making sure the WSDL files used to describe service interfaces conform to standards. An architect not involved with a particular project reviews the project's application design to make sure services aren't duplicated.

At Cendant, project managers have that responsibility. The service name and input and output fields are accessible through an XML-based layer in its Rosetta Stone business domain model. A single group is responsible for updating the business domain model.

"This is how we control reuse," Wiseman says.

If a business domain owner spots a service already in the registry, the service is flagged as a candidate for reuse. A SOA governance board, largely consisting of IT managers, then takes over. Developers need not apply.

"The programmer is the last person that should make the decision," says Wiseman. "They will always want to write something new." **48250**

"We don't want to create a junk drawer of services. What we feel should be in the enterprise UDDI are services that will give us leverage and flexibility across the enterprise."

BENJAMIN MORELAND, MANAGER OF APPLICATION INFRASTRUCTURE DELIVERY THE HARTFORD FINANCIAL SERVICES GROUP

Message Received?

Companies that require highly reliable Web services are building in their own guarantees.

By Mary Brandel



RICHARD DOWNS

WHEN PLACING AN ORDER over the Web, it's not unusual for the site to lock up during the transaction — it's all part of the Web experience, and customers know to call a customer service rep to see if the order went through. But take the human factor out of the equation, as in a Web services transaction. Who's 100% sure that their messages got through, unduplicated and in the right order? After all, you're relying on two applications to communicate with each other to complete the order, using standards such as XML, HTTP and SOAP.

"HTTP is a nice, lightweight mechanism to send HTML or almost any type of format. The problem is, there's no guarantee that the message will get delivered," says Anne Thomas Manes, an analyst at Burton Group in Midvale, Utah. "It offers 92% to 96% reliability, but if you need 99.9% reliability, or at the very least notification if a message doesn't get there, HTTP won't do that for you."

Although analysts don't think reliability is the only problem impeding Web services adoption, it certainly casts a pall of uncertainty over the idea of building anything mission-critical on such a platform.

Some users, such as Peter Osbourne, director of Internet research and development at Dollar Thrifty Automotive Group Inc. in Tulsa, Okla., say they do just fine with TCP/IP and HTTP. "We use Web services extensively [for Web-based car reservations] but have not encountered message reliability problems," he says. Dollar has mechanisms to detect message bottlenecks, but Osbourne says the company hasn't lost any messages.

At companies that need a higher degree of reliability, it's a matter of "hacking their way through the

jungle with a machete," says Ron Schmeltzer, an analyst at ZapThink LLC. These users build reliability into the business logic of the application or employ a mature messaging platform such as IBM's MQSeries.

Once Isn't Enough

ShopNBC is one organization that has given Web services reliability a lot of thought, according to Steve Craig, chief technology officer and vice president of IT development at the shopping network, which is broadcast into 56 million homes.

ShopNBC relies on Web services to fulfill customer orders over the Web and to receive real-time pricing updates from its participating merchants. Because it's such a mission-critical endeavor, Craig and his group structured a three-layer system that supports three types of Web services messaging: real time, near real time and periodic. Each layer reinforces the others to create message redundancy in case the first message doesn't get through.

"If a real-time transaction fired and was missed, there'd be another job downstream to cover that need," Craig explains. Say, for example, a merchant system sends a message to the Web services system at ShopNBC to take a 10% markdown on a product that's airing on TV. If the real-time message wasn't received, another message sent to another server would eventually lower the price — maybe not while the product was airing, but on the next database sync.

Another example is when customers order products over the Web. The Web server attempts to commit the order in real time with the back-end server, but if the server doesn't respond, the order is sent to a separate server to be synced up later.

Build, Don't Add

As ShopNBC demonstrates, reliability must be considered from the very beginning. "You never add reliability to something after the fact — it's not something you can just slap on top of the application," says Don Reeves, vice president of engineering at Black Pearl Inc. in San Francisco.

Black Pearl's B4 platform uses Web services to collect data from disparate sources to provide real-time customer profiles and data analysis. For instance, it sends financial services agents daily lists of high-priority prospects, as well as real-time alerts on products that might interest particular customers. The system needs to collect data from a variety of sources, such as legacy customer databases, marketing campaign systems and live data feeds on stock prices.

Reeves estimates that half the code that makes up B4 is aimed at functionality, and half is intended for error checking. "Whenever you connect to a data source, you have to assume it will fail and have a planned response," he says.

Another approach is to employ a reliable transport protocol, such as a message queuing (MQ) service, rather than using HTTP to transmit Simple Object Access Protocol (SOAP) messages. The dominant MQ service is IBM's WebSphere MQ, which acts as a

mediator to guarantee delivery by storing messages locally until it receives delivery acknowledgment.

"You can send it over SMTP or FTP or an MQ system. Web services is completely independent of the underlying protocol," Manes says. The trouble is, MQ systems are proprietary — IBM's WebSphere MQ doesn't talk with, say, Sonic Software Corp.'s MQ system. This is less of a problem if you're just using Web services internally, but even then, it's an expensive proposition. According to Manes, MQ deployments can reach seven figures.

Using Your Header

To get beyond dependence on a proprietary protocol, companies will have to code specifications into their SOAP headers, Schmeltzer says — such as having a system try to resend a message if an acknowledgment of receipt isn't received within 300 milliseconds.

Today, Schmeltzer points out, individual companies need to do this sort of coding themselves, which can be extremely difficult. However, this coding will eventually be built into standards such as WS-Reliability and WS-ReliableMessaging (see box below).

In the midst of this industry confusion, the lack of a reliable messaging specification is pretty far down the list of what's stopping people from implementing Web services, says Dwight Davis, vice president of Summit Strategies Inc. in Kirkland, Wash. "There's a lot of baggage that comes into play on the list of factors," he says, including the relative newness of the technology and the need to focus on day-to-day crises rather than long-term architectural change. Just the same, before mission-critical Web services applications enter the mainstream, reliable messaging will have to become less complex and costly. **48176**

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Rival Standards

Two reliable messaging specifications are working their way into the industry:

Web Services Reliability (WS-Reliability):

A SOAP-based protocol for exchanging SOAP messages with guaranteed delivery, no duplicates and guaranteed message ordering. **Sponsors:** Sun Microsystems Inc., Fujitsu Ltd., Hitachi Ltd., Oracle Corp., NEC Corp. and Sonic Software Corp.

WS-ReliableMessaging: A transport-independent protocol that allows messages to be delivered reliably between distributed applications in the event of software component, system or network failures. **Sponsors:** IBM, Microsoft Corp., BEA Systems Inc. and Tibco Software Inc.

It's still uncertain which specification will become the industry standard, although Anne Thomas Manes, an analyst at Burton Group, is advising clients to bet on WS-ReliableMessaging because it's backed by more industry heavyweights. Users can also begin using WS-ReliableMessaging as a patch from San Francisco-based Cape Clear Software Inc., as well as in U.K.-based Systanet Ltd.'s Systanet Server.

— Mary Brandel



RICHARD DOWNS

Trouble In Transit

Web services put more of your company's data into the ether, offering more chances for someone to snatch it. By Bob Violino

A TRANSPORT COMPANY'S TRUCKS are scheduled for bogus pickups. A financial services firm's investment data is given away for free. A health insurance provider's private patient data is exposed. These are the disastrous situations that can occur when Web services data is nefariously snatched midstream.

The shareable design of Web services, which gives companies the benefit of easily exchanging data and applications with business partners, also makes them vulnerable to security breaches. Hackers have found ways to tweak the XML code used to tag the data so activity that's actually an attack appears to be valid.

"XML standards are being constructed in bits and pieces, and that's the kind of event that leads to holes that someone didn't think about," says Randy Heffner, an analyst at Forrester Research Inc.

According to experts, hackers have three methods for breaching Web services and XML security: identity-based attacks, in which a hacker poses as an authorized user to gain access to Web services; malicious-content attacks, in which an intruder forces a Web server to perform an unauthorized activity; and operational attacks, in which a hacker manipulates an XML message to tie up server resources. But although the methods are known, safeguarding Web services is difficult because multiple elements must be locked down — the servers, the messages and the

applications. Companies must first secure their Web servers and then decide which business partners and employees will have access to them, how they'll connect to them and which authentication method to use.

No Small Task

Defense manufacturer Northrop Grumman Corp. experienced that difficulty firsthand. Web services are a major component of its Myngc.com portal, which was expected to take about six months to complete. But because of security requirements such as user authentication, the project took three times as long, says Thomas Shelman, vice president and CIO.

The portal gives Los Angeles-based Northrop Grumman a way to efficiently share ordering and billing data with customers and partners, he says. But while Myngc.com provides greater data access to more people, it also creates vulnerabilities because many users outside the organization have access to business applications.

"[The portal] was a significantly larger task than we thought going into it," Shelman says. "I know a lot of companies that are implementing the same sort of thing, and they don't address the security aspects. They're leaving themselves very vulnerable."

"The need for security goes up exponentially as you're trying to expose applications to your business partners," adds Raphael Holder, vice president of shared services operations at Northrop Grumman. He says the company first grappled with how to provide secure remote access to Web services applications for internal employees and ensure that all users entering the portal were authenticated.

"It sounds simplistic, but we're providing more capability here than we have through remote access in general," says Holder. "We're providing access to portlets that touch business data, not just e-mail."

To secure its data, Northrop Grumman deployed a public-key infrastructure system from RSA Security Inc., issuing tokens to all employees authorized to access the portal. Tokens will also be issued to appropriate partners and customers for different levels of access, Holder says. Eventually, the portal will have more than 120,000 users.

Even with the current technology in place, Holder acknowledges that there are security risks with Web services. "We will have to manage [the portal] very closely, and access will be done on a business-case basis with those partners we highly trust," he says.

Exploring the Options

As it explores Web services, Wyndham International Inc., a Dallas-based hospitality company, is also looking closely at how it can provide tight security. Wyndham's research shows that it endured more than 9.5 million attempts at information security breaches from May 2003 through May 2004. They included hacker attacks, Web site defacements and viruses.

"Obviously, security is a huge concern of ours," says Mark Hedley, the company's senior vice president and chief technology officer. He says Wyndham plans to get Web services from its provider of central reservation systems technology, Micros Systems Inc., using industry-standard protocols. Hedley says his company expects Web services to make it easier for

customers to obtain reservations and for Wyndham to share data with suppliers. Wyndham plans to finalize its security plan and implement Web services by the first quarter of 2005.

Heffner notes that there are several ways to approach Web services security. One of the most common is to secure applications at the transport layer, with two-way Secure Sockets Layer connections or a dedicated virtual private network link. SSL can include mutual authentication such as client certificates. Another option, which Heffner says is more suitable for connecting with multiple partners, is to use XML security gateways.

These are network appliances that protect XML and Web services from attacks. They feature XML encryption, digital signatures, access control and other capabilities. Many in the industry expect that new standards will also help bolster security.

Heffner says Web services security is improving because of new standards and products. "XML security gateways provide better solutions for attack protection than

existed a year ago," he says.

Security concerns shouldn't get in the way of Web services implementations, says Heffner. "You may have to spend more now on security than in three years," when more safeguards are built into Web services products, he says. "The bottom line is, if there's business value for Web services now, you shouldn't be holding it up." **48177**

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Help on the Horizon

A new industry standard is raising hopes for Web services security. In April, OASIS (Organization for the Advancement of Structured Information Standards), a global standards consortium in Billerica, Mass., announced that its members had approved **Web Services Security Version 1.0**, a status that signifies the highest level of ratification.

WSS builds on security technologies such as XML Digital Signature, XML Encryption and X.509 certificates to provide a standard way of securing Web services message exchanges. The standard provides a framework for companies to apply security technologies such as authentication and authorization in a Web services environment. WSS has garnered broad support from vendors, and proponents say it will lead to increased adoption of Web services.

"[WSS] will become a standard for most Web services," says Ray Wagner, an analyst at Gartner Inc. "I have suggested that organizations developing strategic Web services begin using [the standard] even if they have no current security requirements. This will set the stage for easily adding security as the profile of the service changes."

Raphael Holder, vice president of shared services operations at Northrop Grumman, says his company is tracking the standard.

— Bob Violino

OVERCOMING INSECURITIES

Web services security standards still aren't complete, but putting an application tied to sensitive data on the Web needn't be a recipe for disaster:

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BY RUSSELL KAY

IN A WORLD OF interconnected networks and Web services, computing workloads are increasingly being split among clients and servers that are far apart in both distance and functionality. This means it's essential for computers to be able to talk to one another and use data generated by another machine as input. This isn't a new situation; in fact, it's the logical extension of how applications have been developed for years.

In their attempts to achieve greater interoperability and efficiency, developers have created subroutines and procedure calls, object-oriented programming and libraries of reusable software. If they can avoid it, developers rarely create applications from scratch. Instead, they try to take advantage of existing hardware infrastructure, tools and software, as well as previously created software components, all to rein in the time and cost of development and deployment. While these approaches go by many different names, we'll refer to them as "component software." Indeed, one can think of Web services as just a more widely distributed form of component software.

Because Windows has become the primary desktop operating system, and because Microsoft Corp. has tried to extend that monopoly to the server world, it's hardly surprising that the company has for years offered its own set of products and standards for component software. Among the oldest of these, and thus the most widely used and best-known, is the Component Object Model (COM) and its network-savvy offspring, distributed COM, or DCOM.

COM's Binary Essence

The real value of component software for developers was that it allowed them to use binary (i.e., machine-code) modules, not source-code libraries, as was the case with most development environments. COM defined an application

COM

DEFINITION

Component Object Model (COM) is a Microsoft-developed, language-independent architecture created in the 1990s that lets developers build applications from reusable, binary software components.

programming interface that allowed diverse components to interact. As long as components used a Microsoft-specified binary structure, they could be written in different languages and still interoperate after they had been compiled. COM enabled the development of application services using compound documents, custom controls, interapplication scripting, data transfer and other types of software interactions.

introduced to succeed VBX. At that time, Microsoft stated that OLE was the name to be used for all of its component technologies.

However, Microsoft soon renamed some parts of OLE that related to the Internet as ActiveX, a moniker that gradually subsumed all the component technologies. OLE then reoccupied its role as a compound document technology,

used mainly in Microsoft Office. COM was first implemented in Windows 95.

In 1996, as networking and networkable applications grew in importance, Microsoft announced its DCOM alternative to the Common Object Request Broker Architecture, or CORBA. DCOM first appeared in Windows NT 4.0 with tools to help build client/server applications that spanned both the corporate network and the Internet. In September 1997, Microsoft once again changed the name of its entire component framework — to COM.

A couple of years later, when it introduced Windows 2000, Microsoft renamed COM to COM+, signifying substantial changes. COM+'s main attraction was that IT could run it in component farms managed by Microsoft Transaction Server. A properly made component could be reused by making new calls to its initializing routine without having to unload it from memory. Components could also be called from another machine, which was previously possible only with DCOM, so Microsoft pretty much dropped DCOM as an

independent concept.

But not even COM+ had much longevity. Microsoft soon launched its .Net initiative, a hasty (and often hazy) framework that almost entirely replaced the COM technology. There is limited backward compatibility — .Net can use a COM object by implementing what's called a "wrapper" — but Microsoft made it clear that for new systems, COM was to be dropped entirely in favor of .Net.

.Net includes "smart" client application software and operating systems, smart devices, Web services that can be combined with other Web services or used directly with smart client applications, a server infrastructure and an environment (Visual Studio.Net) that directly supports a number of development languages through .Net's Common Language Runtime.

Recent Changes

Despite their disavowal in favor of .Net, the technologies of COM and DCOM are still alive and well, even at Microsoft. In the forthcoming Service Pack 2 for Windows XP, for example, Microsoft will implement two big changes to DCOM. It introduces computerwide restrictions that provide an additional access check against an access-control list each time a COM server is activated, called or launched. SP2 also introduces more granular COM permissions, giving administrators greater flexibility in controlling a computer's permission policy. **48251**

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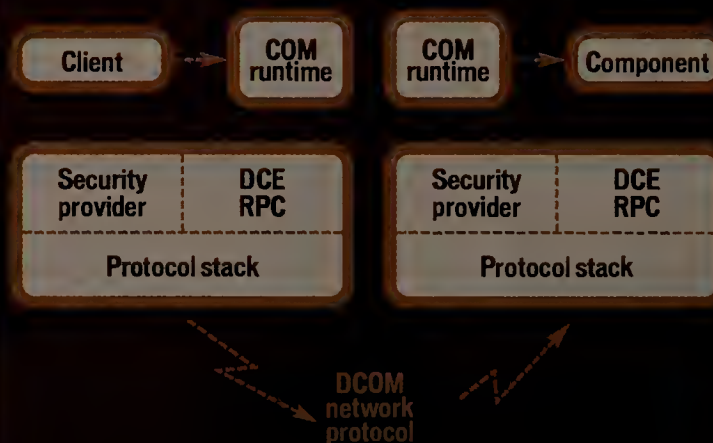
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COM and DCOM in Action



A client that must communicate with a component in another process can't call the component directly. Instead, it has to use some form of interprocess communication allowed by the operating system. COM provides this communication by intercepting calls from the client and forwarding them to the component. When the client and component are on different

machines, DCOM simply replaces the local interprocess communication with a network protocol. The COM runtime provides object-oriented services to clients and components and uses Distributed Computing Environment (DCE) remote procedure calls (RPC) and security mechanisms to generate standard network packets that conform to DCOM.

What's in a Name?

The history of Microsoft component software is complex because the company tends to change its approach and structure every few years, renaming and rebranding technologies. Here's a quick rundown on how component software has changed over the years:

We begin with a technology for compound documents called Object Linking and Embedding (OLE), which was built on top of Dynamic Data Exchange and Visual Basic Extension (VBX) controls from Visual Basic 1.0. (The abundance of acronyms is an unfortunate byproduct of this subject.)

In 1992, Microsoft introduced Windows 3.1, and OLE came with it onto every desktop. This was followed the next year by OLE 2, and in 1994, OCX controls were in-

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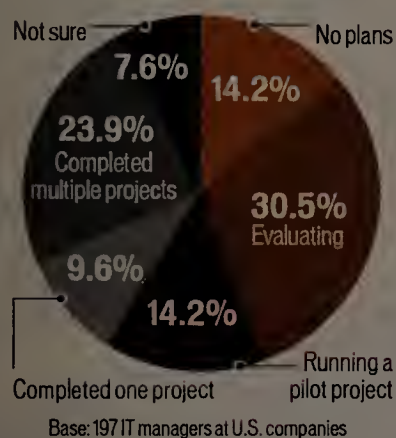
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SNAPSHOTS

Web Services Adoption

What's your organization's current status on the adoption of a Web services architecture?



Primary Drivers

The top six reasons for implementing Web services:

- 1 Solve internal integration issues
- 2 Solve external integration issues
- 3 Extend legacy systems
- 4 Reduce development and maintenance time
- 5 Deploy applications at less cost
- 6 Create reusable modular code

Base: 154 IT managers involved in Web services projects

Top Headaches

The challenges of adopting Web services:



Base: 154 IT managers involved in Web services projects; multiple responses allowed

SOURCE: IDC, FRAMINGHAM, MASS., MAY 2004

MARK HALL

Blurry Web Services

IN THE SUMMER BLOCKBUSTER *Spider-Man 2*, the director signals to the audience that Peter Parker (a.k.a. Spider-Man) has or doesn't have his superhero powers based on the character's ability to see with his eyeglasses. When a powerless Peter Parker looks through them, his vision is clear. When his alter ego, the newly recharged Spider-Man, puts them on, his vision is cloudy.

XML proponents claim that developers of Web services applications are as powerful at exchanging information between systems as Spider-Man is at swinging from skyscraper to skyscraper. But increasingly, these developers must feel like Spider-Man wearing Peter Parker's glasses. Their XML world becomes so gummed up with opaque information that XML just can't handle it.

These difficult bits of data, called opaque data, are binary attachments that XML can't tag effectively. These obstinate files include things like digital signatures and compressed multimedia data, such as MPEG files, and are likely to become a bigger problem for developers in our media-rich, security-conscious Web services application world.

This file-attachment problem is the latest to let the air out of the XML hype balloon that preceded its arrival in the late 1990s. Larger file sizes and vertical-market specifications added performance and complexity problems for XML users. Still, the hype hasn't died down. Today, vendors tout their products' ability to output data in XML formats as if that's all you need to exchange information between programs. They give product buyers a false sense that interoperability issues in the Web services world have evaporated with XML's arrival. That's just not true.

As a general definition for how information can be structured, XML is a giant step forward. But it's not as simple as most vendors would have you and your bosses believe. They want executives to feel warm and fuzzy when they hear that their software uses XML. They want them to think that their products will be compatible with everything already running in your IT shop. Integration, they imply, will be a snap for developers to implement. Return on investment, they suggest, happens almost as soon as you unwrap the software's CDs or download the files. Given the hype, executives might conclude that any integration problems might just be your fault, not the vendors'.

XML's cross-application compatibility hit its first stumbling block in situations where bandwidth was an issue. According to James Kobielus, an analyst at Burton Group, "XML can be a bad thing when you're

trying to secure or speed the flow of traffic." It bloats data transmissions by having to send 10 times as many bits as a non-XML data transfer.

"To get the transparency offered by XML," he says, "you have to sacrifice greater performance."

Then the little vertical problem cropped up, as each industry developed more-precise tagging instructions to assure more complete communications among Web services running throughout the supply chain. The chemical industry developed a version of XML, the retail industry created a different one and so on. XML variants spread quickly, and users now have to learn

when and where to apply filters to distinguish which ones apply to their markets.

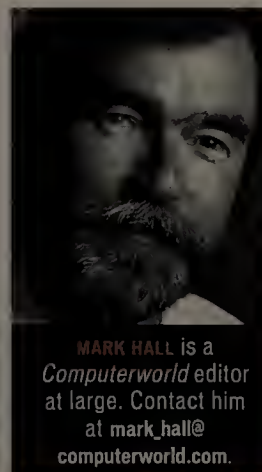
Now vendors are facing up to the problem of opaque data in Web services development. The good news is that there's a serious effort to standardize the way XML works with opaque data. The bad news is that there are five different approaches under consideration, each with its own strengths and weaknesses. Eventually, I suspect, vendors will resolve the problem, either by agreeing to a single standard or by supplying XML parsers that can handle all the existing standards.

XML's strength is its ubiquity. And that's great, unless the most important issue for

your application is performance, or you have a complex, multiple-industry supply chain, or your application's usefulness depends on opaque data. Then XML's pervasiveness won't solve your problem. It may help, but it won't eliminate one of the oldest problems in IT: software interoperability.

The promise of Web services is that it will remove most of the stumbling blocks that exist between vendors' software. Yet the most basic building block of Web services, XML, continues to trip up vendors and users.

That's not to say that XML hasn't helped bridge many gaps among products on the market today. Nor does it obviate Web services' promise to vastly improve vendor software interoperability. But the new power these tools put at your fingertips doesn't eliminate your application integration problems. You still need to don your developer superhero outfit and fight those battles one villain at a time. **48222**



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Software Engineer. Design, Develop, create, and modify general computer applications software or specialized utility programs. Analyze user needs and develop software solutions. Analyze and design databases within an application area, working individually or coordinating database development as part of a team. Will use HTML, Javascript, C, C++, VB, Vbscript, ASP, Powerbuilder, Sybase, Java, Oracle, PI/SQL, SQL Server, ESSbase Hyperion, EIS, EES, Microstrategy, Cognos, Business Objects, Informatica, Tivoli Websphere, Iplanet, WM, VCS, Unix Admin, Win 95/NT.Bach. deg. In Comp Sci, Eng(any) MIS w/5 years exp. in job or as Prog. Analyst, Systems Administrator, Systems Analyst, 40 Hrs./wk., 9-6, \$75,067/yr. Must have proof of legal authority to work in the United States. Send your resume to the Des Moines Workforce Development Center, 430 East Grand Avenue, Des Moines, Iowa 50309. Please refer to Job Order IA1101912. Employer paid advertisement.

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Progr/Analyst: Plan/program network and web appls. for large scale LAN/WAN networks in UNIX/NT envir. using TCP/IP, BGP/OSPF protocols, Cisco Internet Router (1000+), MPLS/VPN, VSAT, SNMP, QOS, Checkpoint, VPN, VoIP and Nokia Firewall; analyze complex circuit / networking / routing issues; direct network testing procedures.

DBA: Impl./upgrade/admin Oracle Appl's for financial/service and 11i ERP/CRP info sys on Solaris, HP/UX, AIX, Compaq TRU64, Unix and Linux; Prepare Instance Strategy and clone instances using manual method, Adconfig, Adclone and Rapidclone utilities; Perform database upgrading with version control and system tuning using DBArtisan, Tickmark, SQL Navigator, 170 systems, PVCs, CVS, DBTuner, RingMaster, TOAD, PL/SQL Formatter; and perform backup/disaster recovery.

Busi./Analyst: Busi. processes analysis/project mgmt in large scale Relational Database Systems. Convert busi. objectives into tech. solutions; develop resource plans and set development schedules; develop UAT plans and coordinate the entire UAT phase; establish standards for requirement gathering, use cases, UAT test cases, and documentation; analyze data in Oracle/SQL/Mainframe db; manage development life cycle including issues of production, manual/publication and future enhancement applying MS/VIS-IO, TestDirector, WinRunner, Rational ClearQuest, Rational Rose, QMF, File Aid, Business Objects, Expert Advisor, and Siebel's GEM; Interface w/off-shore develop centers.

Progr/Analyst and DBA require BS/BA (or equiv. exp.) in Comp. Sc., Engr., MIS or in a related field plus 2 yrs. exp.; Busi./Analyst requires BS/BA in Busi. Adm. or in a related field plus 1 yr. exp. in offered/related position. Must be able to perform all duties on the day of employment. Full-time. Resume to HR NetEffects, Inc., 500 Chesterfield Ctr., Ste.350, St. Louis, MO 63017. No Call/EOE.

DIVISION LEAD WEB DEVELOPER (Lexington, KY) - Design, develop and implement image retrieval services using ASP and server-side Java; design and support SQL and MS Access database; using independent discretion, design and ensure development and delivery of web service projects; supervise and assign work to team members in developing and finalizing projects; coordinate development and production of services with overseas offices; review products and specifications for department; construct data decomposition diagrams, provide data flow diagrams and document processes; write codes for database access and modifications, and guide team members in implementing codes; coordinate testing, implementation, and installation of systems, upgrades, and network lines; regulate software usage and performance, and ensure software compliance with internal regulations.

Requires Bachelors in Computer Science and either 1 yr exp in job offered or 1 yr exp in designing, developing and implementing image retrieval services using ASP and server-side Java; design and support SQL & MS Access databases.

Salary \$59,940/yr. Mon-Fri, 8AM-5PM, 40 hrs/wk.

Send resume to Ginny Burton #4224, Department for Employment Services, 275 E. Main Street 2-WA, Frankfort, Kentucky 40621. Only persons with authorization to work permanently in U.S. need apply. Equal Opportunity Employer.

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Routing/IP Protocols

Enhance existing routing protocols, i.e., BGP, OSPF, ISIS and PIM, and implement convergence and scalability and the supporting infrastructure. Work on TE infrastructure, including extensions and constraint-based routing. Work experience on systems with fault tolerance, development of ISIS, OSPF and GateD required. Requires a BSEE/CS degree or equivalent, 3+ years' experience in C/C++ software development or equivalent combination of education/experience.

MPLS Protocols and Fast Path Data Plane Programming

Architecture, design and develop MPLS LDP, RSVP signaling protocols and QoS, and program MPLS labels in the hardware for the data plane. Experience in POS is required. Experience in Gigabit Ethernet and ATM is highly desirable. Experience in characterization of line card performance with IP and MPLS over POS and ATM data forwarding traffic is desirable. Requires a BS degree in EE/CS and 3+ years' experience in C/C++ software engineering or equivalent combination of education/experience.

Software Quality Test

Plan and execute tests for IP Routing/MPLS/ATM Protocol software. Develop automated test scripts in TCL/TK or C. Expertise with two or more of ATM, BGP, ISIS, MPLS and OSPF is required. Experience testing large network topologies and knowledge of TE or VPN extensions to routing protocols is desirable. Requires BS in EE/CS and 3+ years' experience in the development or SQA of routing protocols or equivalent combination of education/experience. Looking for 1st and 2nd shift candidates.

Applicants must be presently authorized to work in the U.S. on a full-time basis without work visa sponsorship. These jobs are located in our Billerica facility. Relocation assistance is not available. Email resume to: jobs@avici.com or fax your resume to: (978) 964-2650, ATTN: JBPST 0804. Responses by mail can be sent to: Avici Systems, Inc., Attn: Human Resources, 101 Billerica Avenue, Building 2, N. Billerica, MA 01862. No phone calls please. EOE

www.avici.com

IT PROFESSIONALS

Senior Consultant

(Glen Mills, Pennsylvania and other locations through the U.S.). Conduct manufacturing industry client engagements providing consulting services in areas of business process transformation and system implementation, troubleshooting, and integrated software solutions to meet business needs. Conduct review and analysis of client business processes and procedures at organizational and operational levels, interviewing management and administrative personnel to determine optimal integration of business process reengineering with new information technologies and modification of operational procedures. Propose strategic solutions and business process improvements including benchmarking and design analysis. Assess projected timetables, project plans, financial and human capital resources and prepare recommendations. Participate in delivery of system(s), roll-out and implementation modifications. Provide post-implementation support and supervise both technical and functional staff. Participate in client development, including proposal generation. Provide knowledge repository, mentoring and technical liaison role. Provide customization of Oracle Manufacturing Modules using BOM, INV, MRP/SCP, ASCP, WIP/OSFM, COST and Configurator/Applications, Oracle Developer, Oracle Manufacturing and RDBMS.

WAGE: \$102,000/year
Hours: Monday-Friday 9:00am-5:00pm

MINIMUM REQUIREMENTS:

Bachelor's degree or equivalent in Computer Science. Business Administration, MIS, IS or a related field + 3 years exp. in the job offered or 3 years exp. as a Consultant, Project Manager, Project Lead or a related occupation. Prior consulting experience must include Oracle Manufacturing and configuration and customization of Oracle Manufacturing Modules using BOM, INV, MRP/SCP, ASCP, WIP/OSFM, COST and Configurator, as well as Oracle Applications, Oracle Developer, Oracle Manufacturing, Oracle RDBMS.

Please send your resume, referencing Job Order Number WEB443605 to the: PA Careerlink, FLC Unit, 235 W Chelton Ave. Philadelphia, PA 19144. EOE

IT PROFESSIONALS

Senior Consultant, Lead Oracle Applications Database Administrator

(Glen Mills, Pennsylvania and other locations throughout the U.S.). Engage in capacity planning, installation, upgrades, setup, & administration of production & development of Oracle Applications 11i instances & Oracle 9i, 8i databases. Build a high performance & load balanced system architecture in consideration of Global Single Instance readiness. Assist the client in utilization of Oracle Applications by transferring knowledge. Maintain & support Oracle 11i (FIN, HRMS, CRM, SCM, & PAY). Build high performance technical architecture to support database backups, recovery, high availability, & disaster recovery. In support of high availability & disaster recovery, implement Oracle's RMAN system in conjunction with Tivoli Storage manager, 9i RAC, & HP Service Guard. Implement automated tools for monitoring, administration, & maintenance of Oracle Applications using UNIX Shell Scripts, BMC Patrol, Kintana, Rapidclone & Autoconfig. Utilize Enterprise Oracle Application Architecture.

The wage offered is \$80,000 per year. The work schedule is Monday-Friday, 9:00 am to 5:00 pm. The position requires a Bachelor's degree or equivalent in Mathematics, Computer Science, Information Systems, Engineering (any type), or Business Administration + 5 years of experience in the job offered or 5 years of experience as a Senior Consultant, DBA (Oracle Applications), or Information Technology Analyst. Employer regards a foreign degree as equivalent to a US Bachelor's degree as determined by an accredited education evaluation service. Related experience must include Oracle Applications (FIN, HRMS, CRM, SCM, & PAY) Administration and Oracle Database Administration, Enterprise Oracle Application Architecture, High Availability and Disaster Recovery, and at least one year of Global Single Instance (GSI).

Please send your resume, referencing Job Order Number WEB443808 to the: PA CareerLink, FLC Unit, 235 W. Chelton Avenue, Philadelphia, PA 19144. EOE.

Programmer/Analyst needed for Software Development, Services & BPO firm located in S. Burlington, VT. Job duties include: Analyze, design and develop web-based applications using Rational Rose, Java, and C++. Develop core applications using Java and Sun One application Framework. Use SunOne Directory Server (LDAP) for data storage. Applicant must have B.S. degree in computer science, engineering, math, or business. Applicant must also have 2 yrs. exp. in the job duties listed above or in any computer related occupation which must include skills listed above. 40hrs/wk, 8:00am-5:00pm, Mon-Fri, \$70,000/yr. Send resumes to: Job No. 27265, P.O. Box 488, Montpelier, VT 05601-0488.

COMPUTERS - SENIOR SYSTEMS ADMINISTRATOR - Financial Management firm seeks Senior Systems Administrator to manage, maintain and upgrade Solaris/Unix-based network's central backup system, including STK L6000 library with STK 9940B tape drives. Duties include installation/maintenance of the batch system PBS and of Solaris/Linux systems; central LDAP service; internal company web service; central CUPS-based print service; user support and security. Master's degree in Computer Science or Computer Studies and 2 years exp. in job duties required. Will accept candidates with 2 years experience as Systems Administrator of high speed networks in UNIX environment. Mail resume to RTC, 600 Route 25A, East Setauket, NY 11733, Attn: JR.

PROGRAMMER ANALYST

Using knowledge of steel production & mfg processes, implement enterprise-wide financial & mfg software sys. & determine reqmnts & config. AXIOM software to dvp common work processes for multiple plant locations. Must have 4 yrs of exp. as a Prog. Analyst or Sys. Analyst for AXIOM implementations. Exp. must incl. AXIOM implementations at multiple industrial plant locations. High mobility preferred. 40 hrs/wk, OT as reqd, 8 am - 5 pm, \$80,000/yr. Submit resume to: Armstrong County CareerLink, Attn: CL Program Supervisor, 1270 North Water Street, P.O. Box 759, Kittanning, PA 16201-0759. Please refer to Job Order Number WEB 443884.

Programmer/Analyst (position in Atlanta, GA): Apply knowledge of network/sys. architecture, integration, design, & deployment to formulate, define, design, & maintain network architectures using Win. NT, UNIX, OO, Client-server, n-tier environments & RDBMS (Oracle, Sybase, SQL, Mums, Java & web architecture). Req: BS or equiv. in Comp. Sci. or related w/ 2 yrs. of exp. in job offered or as a Sys. Analyst or Software Engg. MS degree in Comp. Sci or its equiv. plus 1 yr exp. will be accepted in lieu of Bach deg. plus 2 yrs. exp.; job may require work at unanticipated worksites in the Atl., GA metro area. Send resume to: Ihsanullah Khokar, Gen. Mgr., Widezone International Co., 6340 N. Leavitt St., Chicago, IL 60659.

Sr. S/W Eng. for Device Driver Dev, SAN, Storage Area n/wk, .NET, OOA/D, & Kernel Level Program. develop app level s/w solns on Windows; d/zn & impl kernel modules /device drivers for Windows; dev func specs & d/zn docs; s/w modules in C, C++ & C#; d/base queries in PL/SQL; n/wk protocols on Windows; d/zn & dev multi threaded s/w solns on multi-proc platform; three-tier solns w/ GUI & Middle Tier in .NET; client-server apps; Windows Services in C++/C# in .NET; enhance perf thru better algos; improve perf of low-level kernel subsystems; solns. to cust. issues; maint. & bug fixing. MS in Comp Sci + 2 yrs. exp. in job duties. Specify Job Code ST & apply: Unilinx 4625 Alexander Dr., # 110, Alpharetta, GA 30022 w/ proof of perm. w/k authzn.

Programmer/Analyst needed for Software Development, Services & BPO firm located in S. Burlington, VT. Job duties include: Analyze, develop, code, implement and test computer software applications/systems for business clients located throughout the U.S. using C++, Linux internals, and VHDL. Also involved in GUI development and developing device drivers. Applicant must have B.S. degree in computer science, engineering, math, or business. Applicant must also have 1 yr. exp. in the job duties listed above or in any computer related occupation which must include 1 yr. exp. in the skills listed above. 40hrs/wk, 8:00am-5:00pm, Mon-Fri, \$60,000/yr. Send resumes to: Job No. 27260, P.O. Box 488, Montpelier, VT 05601-0488.

Software Engineer (2 positions) various locations - Research, designs and develops computer software systems in conjunction with hardware product development applying principles and techniques of computer science, engineering and mathematical analysis. Requires Master or equivalent* in Computer Science, Engineering or Mathematics. *Equivalent is a Bachelor degree plus 5 yrs exp. Requires 3-5** yrs exp in job offered or 3-5* yrs exp as Programmer Analyst, Systems Analyst or Systems Engineer. **3 yrs exp if Master or 5 yrs exp if Bachelor degree. Must have 1-yr exp using Oracle and PL/SQL. 5 day, 40 hr/wk, \$75,000/yr. Please mail resumes to Workforce Development Programs, PO Box 46547, Denver, CO 80202 and refer to order number CO5086151.

SENIOR CONSULTANT - OPEN SYSTEMS - Sr. Cons. to d/zn & anlyz, d/b admin in DB2 UDB EE/EEE/ESE 7.2 & 8.1 on AIX 4.3.3 & AIX5L on RS/6000 & Sun Boxes; Dev bk/up recov strat w/ Tivoli Stor Mgr, Hitachi True Copy; Physical d/zn of UDB d/b, config & perf tuning d/b appl; montr & trblst d/b & appln prblms; d/zn, devlp & implmnt std scrt model, install & mntng in UDB; maint clnt/srvr envir, SYBASE to DB2 d/b conv; d/zn maint strtyg DB2 d/b; prvd 24x7 sys supp; implt DB2 2 Sybase replicn DB2; Info Intgrtr & direct connect & UNIX Shell scriptng KORN, PERL & WAP techn. BS Comp Sci + 2 yr exp job duties OR no BS + 5 years exp. In SW dev. Must be IBM Certified as d/b admin + 1 yr. exp. In WAP tech. Apply: OSI, 4005 Windward Plaza, # 550, Alpharetta, GA 30005 w/ proof of perm work authzn.

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Fax: 704-896-9660
Email: rod@kamacn.com

Systems Analysts to analyze, design, implement business processes using SAP, Java, VB, C, C++, Oracle, PL/SQL, etc under Windows/UNIX OS; perform reqs gathering and gap analysis; prepare functional, technical specifications; develop training material for end users and coordinate system/user acceptance testing. Require BS or foreign equiv. in CS/Engg (any branch) with 2 yrs exp in above skills, or MS or foreign equiv in one of the above fields. Competitive salary, f/t position. Travel involved. Resumes to HR, Smartsoft International, Inc., 3965 Johns Creek Court, Suwanee, GA 30024.

Database Administrator wanted by consulting co. in IL to dvp data model describing data elements & their usage. Test, correct errors & modify changes to prgms or data base. Review, estimate time & cost of projects. Direct prgmrs & analysts, review workflow charts & train d/base users. Must have Bach or equiv in Comp Sci & 1 yr exp in job offd. Employer will accept deg equivalency based on combo of Education, training or exp in tech industry in lieu of Bach deg. Respond to: Mr. Mohammad N. Yaqoob, MY Management, 1741 S. Ruble St., Chicago, IL 60616. No calls.

Computer Support & Research Specialist: Design, coordinate activities of computer systems; formulate info for corporate decision making; collect & analyze data; train users, troubleshoot all hardware/software components. Bachelors/Equivalent in Comp. Sc./Engineering w/rel. exp. Resume to HR, Falcon Farms, Inc., 2330 NW 82nd Avenue, Miami, FL 33122.

SYSTEMS ANALYST, Atlanta, GA. Requires B.S. computer science and 2 years experience. Provide system analysis, implementation, maintenance and support using full life-cycle development, Legacy and client/server systems. Interested applicants please submit resume to Attn: HR Dept., Information Technology Resources, 1355 Peachtree St., NE, Suite 110, Atlanta, GA 30309.

OH ins. co. seeks Systems Analyst to assist in preparing detailed technical specs, design code, test, debug docs. & maintain programs for automated business systems. Min req: Bachelor's in Engineering or eqv. & 3 mos. in job or job related exp. including: XML, UML, Visio, VSS, Java-Script, SQL server, J2EE, EJB, WSAD, VisualAge, Oracle, CFML. Resumes to: JK-T64A135, 300 N Commons Blvd., Mayfield Village, OH 44143. No calls. EOE.

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Software Engineer (2 positions) various locations - Research, design and develop computer software systems in conjunction with hardware product development applying principles and techniques of computer science, engineering and mathematical analysis. Requires a Master or equivalent* in Computer Science, Engineering or Mathematics. *Equivalent is Bachelors plus 5 yrs exp. Must have 3-5** yrs experience in the job offered or 3-5 yrs as a Systems Analyst, Programmer Analyst or Systems Engineer. **Three yrs exp if Masters or 5-yr exp if Bachelors. Must have 1-yr exp using Vignette. 5 day, 40 hr/wk, \$100,000/yr. Please mail resumes to Workforce Development Programs, PO Box 46547, Denver, CO 80202 and refer to order number CO5086145.

Non-profit S/W org in SF looking for S/W Dev Mgr to hire/direct S/W Release and QA teams; install & administer web apps; integrate crypt srvc to enable secure storage & xchange of information; ensure corp s/w security by utilizing s/w dev methods and best practices to protect against programming errors & hacker activity; enhance s/w dev processes and tools. Req: MS or equiv + 3 yrs in s/w dev/mngt. Exp in lrg scale s/w dev projects; OO s/w dev; C & C++, Perl, open source projects; mass market, client/desktop apps dev; x-platform dev exp (Linux, Mac OS X, Windows); installing and managing LXR & Bonsai. Send res to: devmgr-job@osafoundation.org

Need IT Professionals like Software Engineers, Programmer Analysts, IT Business Managers for company based in Bristol, PA. MS/BS Degree or equivalent in C.S, CIS, MIS, Engg (any), Math, Phy. / rel field and/or rel. work exp. All positions may involve travel &/or relocation to project sites throughout the U.S. Mail resumes to HR at Surya Systems Inc., 1200 New Rodgers Road, C 7A, Bristol, PA 19007. State the post applied for.

Time Warner Cable seeks applicants for the position of OLAP Application/Administrator in Charlotte, NC. Under close supervision, engage in moderately complex tasks regarding system and data administration. Requirements include bachelor's in Information Systems or Computer Science and working knowledge of administering computer system and working knowledge of Cognos Upfront/Powerplay, Informatica ETL, Peoplesoft EPM, Tidal and Onbase. Respond by resume to Paul Santos, Time Warner Cable, 7910 Crescent Executive Drive, Charlotte, NC 28217.

Programmer/Analyst with experience in time and attendance software and biometric timeclocks, relational database design and implementation, to work in various locations throughout US. Send resume to SAIC, 8301 Greensboro Dr., Mail Stop E 12-1, McLean, VA 22102. Attn: SAIC HR. Must reference job code #CEL089312. EOE.

Programmer/Analyst needed for Software Development, Services & BPO firm located in S. Burlington, VT. Job duties include: Analyze, design and develop Forte based software applications in a client/server environment for clients located throughout the East Coast using middleware-programming including Forte, Forte Express, Forte Conductor, Rational Rose, Oracle, and DB2. Applicant must have B.S. degree in computer science, math, engineering or business. Applicant must also have 2 yrs. exp. in the job duties listed above or in any computer related occupation which must include skills listed above. 40hrs/wk, 8:00am-5:00pm, Mon-Fri, \$60,000/yr. Send resumes to: Job No. 27262, P.O. Box 488, Montpelier, VT 05601-0488.

Software Engineer (Merrimack): Design & develop, Computer software systems using C, C++, Java, Servlets, JSP, JDBC, EJB, AWT, Swing, Perl, Shell Scripts, Expect, Rational tools (Clearcase, Multisite, Clearquest, DDTs) administration, SCM training and support, Release engineer (GNU make, cygwin, shell scripting) for large-scale multi-platform (UNIX, NT, Linux, VxWorks) development environment. Installation, Maintenance, support, Administration, Troubleshooting, Recovery. Worked on Cobol, CICS, JCL, DB2 on MVS. Req'd Bach's in CS, Eng (any), Math, or MIS, 5 yrs exp in job or Prog Analyst. 25% travel is req. 40 hr/wk, mon-fri, 9am to 6 pm \$102,690/yr. Send 2 copies of resumes to Job Order # 2004-151, P.O.Box 989, Concord, NH 03302-0989

Sr. Quality Eng. wanted by company engaged in graphics and multimedia technology design, manufacturing and marketing. Requires Bach. in CS or EE plus 5 yrs exp. including audio/video software. Reply to ATI Research, Inc. H.R. Dept., Attn: K.B., 62 Forest Street, Marlborough, MA 01752.

Software Engineer needed w/Masters degree or Foreign Equiv. & 1 yr exp in job offered or 1 yr exp as Programmer Analyst or Technical Lead. 1 yr. exp in using Weblogic Portal for backend integration w/Oracle, JMS, XML, JSP, Servlets, JavaScript, Dream Weaver, Java & J2EE on Unix OS. Develop EJBs in Weblogic Cluster environment. Send resumes to: Algomod Technologies Corp., 101 Southhall Lane, Suite 400 PMB #401, Maitland, FL 32751.

Computer
eTechnosoft Corporation has multiple openings for Programmer/Analyst, Software Engineer, Project Lead/Managers. Send resume to: 8700 W. Bryn Mawr Avenue, Suite 800 South, Chicago, IL 60631 or email to: resume@etechnosoft.com

ADVENT GLOBAL SOLUTIONS, INC.

SOFTWARE ENGINEERS: to research, design, develop computer software systems and lead new product development projects to timely completion. Ability to evaluate and design SAP software is required. Needs a Masters in CS/MIS or any related degree combined with 1+ years experience or Bachelors with 5 years experience in designing and developing computer software systems.

SYSTEMS ANALYSTS: to analyze, design and develop operational procedures to automate processing and to develop new systems to improve production. Knowledge of SAP, Oracle, and other business related software is essential. Needs a Bachelors in Engineering/CS or in any related field combined with 5 years relevant experience in designing and developing computer software systems.

COMPUTER PROGRAMMERS: to design, develop, identify and implement solutions within SAP systems. Design, develop, write, test programs and perform SAP implementations. Knowledge of SAP, Oracle, and other business related software is essential. Needs Bachelors in Engineering/CS or in any related field with 3 years relevant experience in designing and developing SAP systems.

Please send resumes to Advent Global Solutions, Inc., Human Resources, 3419 N. Kennicott Avenue, Suite C, Arlington Heights, IL 60004.

Software Quality Assurance Engineer

PCTEL Inc. a global leader in simplifying mobility seeks an experienced Software Quality Assurance Engineer to evaluate and test computer software systems according to specifications and standards. Will develop and write test scripts, initiate the test and analyze end results. Will perform testing of wireless mobility solutions products, write and execute test plans, test cases and scripts. Develops new test strategies, improve processes for incident handling, test development, automated testing, and release control. Develop and maintain detailed test plans of each product line in test. Reviews functional specifications and design documents for accuracy, testability, and to test customer usage scenarios. Requires, min. of two years product exper. with Windows 98/ME/2000/XP; MS Office; MS SQL Server; Pocket PC; Extensive knowledge of 802.11 A/B/G; Working knowledge of GPRS, UMTS and CDMA, a B.S. degree in Computer Science or equivalent and a min. of two years exper. in the job offered. Requires travel to Eastern Europe approx. 20% of the year. Candidate must be legally eligible to work in the U.S. for any employer.

Send resume directly to: jobs@pctel.com. Please include Job code 500 QA Engineer in the subject line. Or mail directly to: HR Dept., PCTEL, Inc. 8725 W. Higgins Rd. Suite 400, Chicago, IL 60631. PCTEL Inc. is an equal opportunity employer.

Computer Programmer III, experience to include analysis of programming procedures using MicroSoft Access and SQL in a financial area including knowledge of accounting cycle, debits/credits and adjustment of entries to work in our Cleveland, Ohio office. Send resumes to Lapine Truck Sales and Equipment Co., 3131 E. Royalton Rd., Cleveland, OH 44147, Attn: HR. Must reference job code 1221.

IT PROFESSIONALS

Senior Consultant

(Glen Mills, Pennsylvania and other locations throughout the U.S.). Assist in the analysis, development and implementation of systems, or business processes for state governments/agencies. Utilize technical expertise and knowledge of public sector welfare regulations and policies including Temporary Assistance to Needy Families (TANF), Food Stamp (FS), and Health Insurance Portability and Accountability Act (HIPAA) to create systems compliant with federal regulations. Responsible for defining systems strategy, developing system requirements, designing, prototyping, testing, training, defining support procedures and implementation. Perform needs assessment and fit/gap analysis between client requirements and functionality. Create detailed design specifications for system and technical requirements (e.g., business processes, infrastructure, interfaces, reports, enhancements, and/or conversion), prepare technical documentation, and develop and test applications. Create database models and data dictionaries. Develop work plans and work with project team members to complete assigned project tasks within time constraints. Design, develop, test and implement interfaces between the client's systems. Utilize Unisys Mainframe Legacy System (2200) and MAPPER. Perform accurate analysis and effective diagnosis of client issues and manage day-to-day client relationships at peer client levels.

The wage offered is \$79,000 per year. Work schedule: Mon-Fri, 9:00 am to 5:00 pm. The position requires a Bachelors degree or equivalent in Engineering (any type), Computer Science, Math, Information Systems and Business Administration + 6 years of experience in the job offered or 6 years of experience as a Consultant, Senior Consultant, Senior Software Engineer or Software Developer. Employer will regard a foreign degree to be equivalent to a U.S. Bachelors degree as determined by accredited U.S. evaluation service. Related experience must include public sector welfare program regulations and governing statutes including TANF and Food Stamps, Unisys MAPPER based management information systems, case management, eligibility determination, payment distribution and inter-agency interfaces.

Please send your resume, referencing Job Order Number WEB443781 to the: PA Careerlink, FLC Unit, 235 W. Cheltenham Avenue, Philadelphia, PA 19144. EOE.

Lead Network Software Engineer - Lead dvlpmnt, maintenance & deployment of Red Hat N/work s/ware applics products; perform product engg functions for ERP products, using distributed computing infrastructure; lead s/ware & d/base deployment & operating systms upgrades on large n/works of Red Hat Linux servers; dvlpg systm mgmt & systms admin features to function as part of Red Hat N/work's managed services component; lead dvlpmnt of new s/ware applics & enhancements of existing applics by integrating SOAP & XML-RPC communication protocols for linking into an object model & a collaboration infrastructure; lead dvlpmnt of applics & modules to handle distributed applics using XML-based data exchange protocols (i.e., SOAP, XML-RPC), & of object model infrastructure based on SOAP & XML-RPC; enable new & existing applics as part of Web Services infrastructure for Red Hat Linux clients using SOAP & XML-RPC; function as project Lead & dsng & dvlpg modules for Web Services infrastructure, using: SOL d/base backends (i.e., Oracle, Sybase, Postgres SQL), Red Hat Package Manager (RPM), d/base-backed XML representations & protocols for exchange of info in decentralized distributed envrmt like SOAP & XML-RPC; lead dvlpmnt of applics & modules to run Red Hat N/work client tool (up2date) & systms registration support tools, & of availability & performance monitoring agents for Red Hat Linux systms; function as tech lead & advise subordinates & peers in identifying, localizing, & correcting applics problems & defects. Req: Master's (or equiv) in Comp Sci; 3 yrs in job offd (only where exact duties listed above were performed) or 3 yrs as S/ware Dvlpr or S/ware Eng; & 1) Min 5 yrs. theoretical & applied exp w/Red Hat Linux; 2) Min. 3 yrs. theoretical & practical exp in following: a) dsng & dvlpg s/ware applics in C & Perl; b) n/work applics dvlpmnt; c) UNIX; 3) Min. 2 yrs. theoretical & practical exp in a)distributed applics dvlpmnt, & w/distributed computing protocols (SOAP & XML-RPC) implemented in C, Python & Perl; b)dsng & dvlpg applics utilizing Oracle & Postgres SOL, among other SOL d/bases; c) dsng & dvlpg s/ware applics in Python. Hrs: 40+; Salary: \$ 80K/yr. Interested applicants apply at nearest Employment Security Commission office or send resume to Employment Security Commission, 3351 Carl Sandburg Ct, Raleigh, NC 27610. All resumes & applications must incl SS# & refer to JO# NC7251048 & DOT code 030.062-010.

Software Engineer (Merrimack): Research, design & dev computer software syst in conjunction with hardware product development. Consult with hardware eng & other eng staff to evaluate interface between hardware & software, & operational & performance requirements of overall system. Provide technical guidance on client projects. Will use Win NT/2000/XP, C, C++, Java, Cobol, Unix, EJB, Linux, Sun Solaris, Shell Scripts, Perl, Visual Source Safe, WebLogic, Rational Rose, Clearquest, JMS, JDBC, JSP, HTML, VB, PB, Jbuilder, Visualstudio, Clearcase, VxWorks etc. Req'd Masters in CS, Eng, Math, or MIS, 2 yrs exp in job or Prog Analyst or Syst Analyst or Bach's with 5 yrs as Prog Analyst or syst analyst. 25% travel req. 40 hr/wk, mon-fri, 9am to 6 pm \$102,690/yr. Send 2 copies of resumes to Job Order # 2004-104, P.O.Box 989, Concord, NH 03302-0989

Software Engineer (Merrimack): Research, design & dev computer software syst in conjunction with hardware product development. Consult with hardware eng & other eng staff to evaluate interface between hardware & software, & operational & performance requirements of overall system. Provide technical guidance on client projects. Will use Win NT/2000/98/95, Oracle, UNIX, XML, UML, WebLogic, WebSphere, Java, EJB, JDBC, JNDI, J2EE, JSP, HTML, HTTP, TCP/IP, WAP, HDML, UP SDK, RMI, Rational Clear Quest, Sun Solaris, Jbuilder, Visual Café, Rational Rose, VB, SOL, PL/SOL etc. Req'd Bach's in CS, Eng, Math, or MIS, 5 yrs exp in job or Prog Analyst or Syst Analyst or Masters with 2yrs as Prog Analyst or syst analyst. 40 hr/wk, mon-fri, 9am to 6 pm \$102,690/yr. Send 2 copies of resumes to Job Order # 2004-588, P.O.Box 989, Concord, NH 03302-0989

IT PROFESSIONALS

Senior Technology Consultant

(Glen Mills, Pennsylvania and other locations through the U.S.). Conduct manufacturing industry client engagements providing consulting services in areas of business process transformation and system implementation, troubleshooting and integrated software solutions to meet business needs. Conduct review and analysis of client business processes and procedures at organizational and operational levels, interviewing management and administrative personnel to determine optimal integration of business process reengineering with new information technologies and modification of operational procedures. Propose strategic solutions and business process improvements including benchmarking and design analysis. Assess projected timetables, project plans, financial and human capital resources and prepare recommendations. Participate in delivery of system(s), training, roll-out and implementation modifications. Provide post-implementation support and supervise both technical and functional staff. Participate in client development including proposal generation. Provide knowledge repository, mentoring and technical liaison role. Provide customization of Oracle Manufacturing Modules utilizing BOM, INV, MRP/SCP, ASCP, WIP/OSFM, COST and Configurator Oracle Applications.

The wage offered is \$100,000 per year. The work schedule is Monday-Friday, 9:00 am to 5:00 pm. The minimum requirements are as follows: Bachelor's degree or equivalent in Computer Science, Math, Engineering (any), Management Information Systems or Information Systems + 3 years of experience in the job offered or 3 years of experience as a Principal Consultant, Software Engineer Consultant, Technical Staff or related occupation. Employer will regard a foreign degree to be equivalent to a U.S. Bachelor's degree as determined by an accredited credentials evaluation service. Related experience must include at least 3 years of Oracle Manufacturing and configuration and customization of Oracle Manufacturing Modules using BOM, INV, MRP/SCP, ASCP, WIP/OSFM, COST and Configurator, as well as Oracle Applications.

Please send your resume, referencing Job Order Number WEB443619 to the: PA Careerlink, FLC Unit, 235 W. Cheltenham Avenue, Philadelphia, PA 19144. EOE.

IT PROFESSIONALS

Manager

(Glen Mills, PA and other locations throughout the United States). Responsible for leading definition, design, and implementation of technology based solutions. Manage teams of technical and functional resources in systems integration, custom application development and business IT strategy. Responsible for systems analysis, technical architecture and project management. Lead communication of project methodology and development/implementation processes and manage the selection and implementation of various technologies and commercial off the shelf software. Utilize Enterprise Application Integration tools such as TIBCO and WebMethods/ActiveWorks to allow clients to share data among packaged applications, custom developed applications and legacy systems. Design and manage development of interfaces to various systems including databases (Oracle and Informix), CRM Systems (Siebel), ERP Systems (SAP) and application servers/portals (Broadvision). Manage the design and development of custom built applications using programming languages such as Visual Basic and Perl. Assist clients in leveraging their information assets for improved operational efficiency and business performance.

\$105,000/year. Mon-Fri 9:00am-5:00pm. The minimum requirements are as follows: Bachelor's degree in Computer Science, Information Systems, or Engineering (any) plus 4 years of experience in the job offered or 4 years of experience as a Manager, Senior Consultant, Consultant, or Systems Analyst. Related experience must also include at least 2 years of Enterprise Application Integration software (TIBCO or WebMethods/ActiveWorks); Relational Databases (Oracle and Informix); ERP Systems (SAP); CRM Systems (Siebel); and, Programming languages (Visual Basic and Perl).

Please send your resume, referencing Job Order Number WEB443613 to the: PA CareerLink, FLC Unit, 235 W. Cheltenham Avenue, Philadelphia, PA 19144. EOE.

IT PROFESSIONALS

Senior Consultant

(Glen Mills, Pennsylvania and other locations through the U.S.). Responsible for solving business problems for clients through Information Technology investments. Solutions include creating information systems strategy, defining system requirements, designing, prototyping, testing and implementing enterprise applications. Responsible for designing and implementing PeopleSoft Enterprise Performance Management (EPM) and PeopleSoft Financials Systems and its subcomponents, PeopleSoft Activity Based Management (ABM), PeopleSoft Enterprise Warehouse (EW), Cognos PowerPlay, PeopleTools, PeopleSoft nVision and PeopleSoft Projects in order to define, track and report financial and operational performance of organizations. Perform process redesign and process reengineering.

The wage offered is \$84,000 per year. The work schedule is Monday-Friday, 8:00 am to 5:00 pm. The minimum requirements are as follows: Bachelor's degree Bachelor's degree in Computer Science, Engineering (any), Math, Business Administration, Information Technology or Management Information Systems + 5 years of experience in the job offered or 5 years of experience as a Senior Consultant, Consultant, Analyst or Supervisor. Related experience must include at least 2 years of experience with the design and implementation of PeopleSoft Financial Suites, PeopleSoft Enterprise Performance Management (EPM), Enterprise Warehouse (EW) and Activity Based Management (ABM), as well as PeopleSoft delivered and supported tools, including Cognos PowerPlay, PeopleTools and PeopleSoft nVision and process redesign.

Please send your resume, referencing Job Order Number WEB443790 to the: PA Careerlink, FLC Unit, 235 W. Cheltenham Avenue, Philadelphia, PA 19144. EOE.

IT PROFESSIONALS

Manager

(Glen Mills, Pennsylvania and other locations throughout the U.S.). Manage information technology (IT) consulting projects involving design, development & implementation of complex IT systems for large public sector organizations. Apply knowledge of IT systems & Public Sector business processes to guide business and technology teams during software development & systems integration activities. Develop project work plans & implement projects within budget, scope & scheduling constraints. Pursue contracting opportunities for large scale IT projects & negotiate contracts within scope & in compliance with the local and federal IT procurement rules. Manage teams during various phases of the Software Development Life Cycle (SDLC), including, analysis, design, testing, user acceptance, and system cut-over. Identify & resolve systems integration issues during implementation of business critical systems, such as, Public Transportation Mgmt. Systems, Financial Mgmt. Systems, Data Warehouse & Business Intelligence systems. Manage business and technology professionals during the implementation of a Transportation Asset/Maintenance Mgmt. IT System (a \$22,000,000 client/server COTS System on an Oracle DBMS with Mainframe COBOL based custom software) & Maintenance/Operating Expenditure Tracking IT System (a web based custom developed financial Data Warehouse & a custom client/server financial application an Oracle DBMS).

Salary \$105,000 per year. Mon-Fri, 9:00 am to 5:00 pm. The position requires: Bachelor's degree in Computer Science, Math, Information Systems, MIS or Engineering(any), Business Admin.+ 3 years of experience in the job offered or 3 years of experience as Manager, Senior Consultant, Consultant or Business Analyst. Related experience must include at least two years of IT consulting and IT system implementation in large public sector organizations, experience in various areas of the Software Development Life Cycle (SDLC), including, analysis, design, testing, user acceptance, and system cut-over, the management of teams during large-scale (\$5,000,000) systems implementation projects, and pursuing contracts for large scale IT projects. Experience must also include the implementation of financial systems, Data Warehouse systems, Commercial-off-the-Shelf (COTS) and custom developed applications, Client/Server and Web based systems, Oracle DBMS systems, and Mainframe systems.

Please send your resume, referencing Job Order Number WEB443828 to the: PA Careerlink, FLC Unit, 235 W. Cheltenham Avenue, Philadelphia, PA 19144. EOE.

IT PROFESSIONALS

Consultant

(Glen Mills, PA and other locations throughout the United States). SME (Subject Matter Expert) responsible for scoping, designing, building and deploying messaging solutions utilizing TIBCO Active Enterprise, IBM Websphere Portal Server, IBM MQ platform and Web Services with SOAP over HTTP (XML). Develop, configure and deploy interfaces using TIBCO Integration Manager and IBM Crossworlds Interchange Server to enable real time transaction processing on distributed operating systems. Responsible for scoping, designing, building and deploying integrated enterprise content management and portal solutions utilizing J2EE-based (Java) portal platforms (IBM Websphere Portal Server). Evaluate and assess business requirements in middleware/messaging and application server/portal server software selection. Communicate and present findings of assessments and make recommendations to upper management on technical best practices in design, development and deployment of applications using middleware/messaging and/or application servers.

The wage offered is \$74,752/year. The work schedule is Monday-Friday 9:00am-5:00pm. The minimum requirements are as follows: Bachelor's degree in Engineering, Business Administration, Information Systems or Computer Science plus 2 years experience in the job offered or 2 years experience as a Consultant, Systems Analyst, Subject Matter Expert or Lead Developer. Related experience must also include at least 1 year of TIBCO Active Enterprise; IBM Websphere Portal Server; IBM MQ Platform; SOAP and XML; TIBCO Integration Manager; IBM Crossworlds Interchange Server; and, J2EE (Java) portal platforms.

Please send your resume, referencing Job Order Number WEB 443466 to the: PA CareerLink, FLC Unit, 235 W. Cheltenham Avenue, Philadelphia, PA 19144. EOE.

Senior Consultant

(Glen Mills, PA and other locations throughout the United States). Conduct review and analysis of client business processes and procedures at organizational and operational levels, interviewing management and administrative personnel to determine optimal integration of business process reengineering with new information technologies and modification of operational procedures. Propose strategic solutions and business process improvements including benchmarking and design analysis. Assess projected timetables, project plans, financial and human capital resources and prepare recommendations. Participate in delivery of system(s), roll-out and implementation modifications. Supervise technical consultants and analysts. Technical tools utilized include: SQL Server, Oracle, Visual Basic, COBOL, Unix, Windows NT, MS Office, PowerPoint, and DBMS.

\$81,000/year. Mon-Fri 9:00am-5:00pm. The minimum requirements are as follows: Master's degree in Computer Science, Computer Information Systems, Information Systems, Management Information Systems, Information Management, or Business Administration + 1 year experience in the job offered or 1 year experience as an Associate, Financial Services Officer, or related. Prior experience must include conversion of system(s) to automated database involving redesign, analysis, process re-engineering, operations management, and business profitability and risk analysis. Prior experience must also include SQL Server, Oracle, Visual Basic, COBOL, Unix, Windows NT, MS Office, PowerPoint, and DBMS.

Please send your resume, referencing Job Order Number WEB 443732 to the: PA CareerLink, FLC Unit, 235 W Cheltenham Ave., Philadelphia, PA 19144. EOE.

IT PROFESSIONALS

Senior Consultant

(Glen Mills, PA and other locations throughout the United States). Assess, design, and implement business processes for clients in the Financial Services industry with emphasis on developing process models, enabling functionality, and transforming business processes in the banking sector. Design and re-engineer business processes in mortgage origination and servicing and develop and implement activity-based cost accounting models in the mortgage industry, including the creation of process models, definition of cost drivers and cost objects, resource allocation, and creation of cost model reports. Develop custom design requirements for the implementation of Customer Relationship Management (CRM) systems and processes that enable clients to efficiently manage relationships with their customer base. Identify organizational, market, and industry opportunities for strategic cost reduction and performance improvement and conduct cost & profitability analysis of operational processes to implement recommended solutions focusing on clients in the Financial Services industry. Design transactional and functional requirements supporting ERP (Enterprise Resource Planning) system implementations, including SAP FI/CO (Financial Management and Controlling) to meet client objectives for managing the financial aspects of their business. Ensure that the delivery and implementation of client solutions meets requirements and industry standards through the development and use of project work plans, direct supervision of project team members and stakeholders, as necessary. Provide input to project budgeting, staffing, and change leadership requirements, assist in the development of risk mitigation strategies, knowledge transfer, supporting communication and educational materials and develop post-project debriefing/"lessons learned" documentation. The wage offered is \$93,503/year.

Mon-Fri 9:00am-5:00pm. The minimum requirements are as follows: Master's degree in Business Administration, Finance or Financial Management plus 3 years of experience in the job offered or 3 years of experience as a Consultant, Senior Consultant or Manager. Related experience must also include at least 6 months of Analysis & design of business processes in the financial services industry; Design & re-engineering of business processes in mortgage origination & servicing and implementation of activity-based cost modeling systems; Design & implementation of CRM solutions and systems; Cost & profitability analysis of operational processes focusing on the Financial Services industry and identification & analysis of opportunities for strategic cost reduction and performance improvement; and, Implementation of ERP (Enterprise Resource Planning) systems including SAP FI/CO.

Please send your resume, referencing Job Order Number WEB443674 to the: PA CareerLink, FLC Unit, 235 W. Cheltenham Avenue, Philadelphia, PA 19144. EOE.

IT PROFESSIONALS

Middleware Product Engineer/Solutions

(Glen Mills, Pennsylvania and other locations throughout the U.S.). Responsible for technical client engagements involving business applications and technology products supported by solutions Network with primary focus on Real Time Enterprise Application Integration (EAI), integrating Middleware applications with other Systems specifically using IBM Websphere, IBM MQSeries, Tibco and WebMethods. Conduct integration of business needs and technology solutions, supporting client projects and sales teams in configuration, customization, and implementation of selected packages and applications for sales demonstrations and client based project implementations.

The wage offered is \$ 87,150 per year. The work schedule is Monday-Friday, 8:00 am to 5:00 pm. The minimum requirements are as follows: Bachelor's degree or equivalent in Computer Science, Engineering (any type), Management Information Systems, Computer Information Systems, or Math + 2 years of experience in the job offered or 2 years of experience as a Programmer Analyst or Senior Consultant. Prior consulting experience must include Real Time Enterprise Application Integration (EAI), and integrating Middleware applications with other systems specifically using IBM Websphere, IBM MQ-Series, Tibco and Webmethods.

Please send your resume, referencing your Job Order Number WEB443819 to the: PA Careerlink, FLC Unit, 235 W. Cheltenham Avenue, Philadelphia, PA 19144. EOE.



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Software Engineer - Develop, create, modify computer syst/apps software & specialized utility programs. Analyze, design databases within an application area. Analyze user needs, develop software solutions using Siebel CRM & related software. Bachelor's degree or foreign equiv. Will accept 3 yrs undergrad study & 3 yrs exp as a computer professional in lieu of Bachelor's degree. Degree must be in CS/CA or Eng. Must have 1 yr exp. using Siebel CRM. Extensive travel, frequent relocation. \$66,800/yr 40 hrs/wk. EEO/AAP/M/F/V/H Submit resumes to Site Manager, PA CareerLink - Westmoreland County, 300 East Hillis Street, Youngwood, PA 15697-1808 Job Order No WEB 442758.

IT ERP Programmer/Engineer II (with Bachelors degree and 4 years experience or Associates degree plus 6 years of experience) - Job entails and requires experience in analysis, design, configuration, testing, maintenance and support commercial solutions using SAP R/3, FI-GL, FI-SGL, CO, ECCS, CCA, PCA, FI-AM, FI-AR, FI-AP, ABAP query and SAPscript Design. Experience must include team leadership. Attractive compensation package. Post resume on www.discovery.com, click on About our Company.

Software Engineer - Develop, create, modify computer syst/apps software & specialized utility programs. Analyze, design databases within an application area, analyze user needs, develop software solutions using Graphical User Interface (GUI) & internet apps. Bachelor's degree or foreign equiv. Will accept 3 yrs undergrad study & 3 yrs exp as a computer professional in lieu of Bachelor's degree. Degree must be in CS/CA or Eng. Must have 1 yr exp. Using 1 of A and 2 of B: A) Windows 00, Windows NT, Windows XP, Oracle B) Visual C++, C, C++, PowerBuilder, Crystal Reports, Visual Basic. Extensive travel, frequent relocation. \$66,800/yr 40 hrs/wk. EEO/AAP/M/F/V/H Submit resumes to Site Administrator, Greene County CareerLink, 4 West High Street, Waynesburg, PA, 15370-1324 Job Order No WEB 442774.

Software Engineer, Appls. Job location: Tampa, FL. Duties: Design, develop & customize software using Oracle & Microsoft tools. Modify Oracle apps & analyze & design databases w/in fin. Appls. using Oracle methodology. Coord. database develop. & modify gen. comp. appl. software or specialized utility progs. Implement, configure & customize Oracle Financials & Enterprise Data Warehousing & Business Intelligence modules. Requires: B.S. in Comp. Sci., Eng. or a related field (will accept any comb. of educ. & exp. equiv. to a B.S. degree) & 3 yrs. exp. in the job offered or 3 yrs. exp. as a Systems Analyst, Prog/Analyst or Prog. Concurrent exp. must incl. 3 yrs. exp. designing & customizing software & 3 yrs. exp. using Oracle. Mail resume (no calls) to: Tim Howe, CTG, Inc., 550 North Reo St., Ste. 300, Tampa, FL 33609-1037.

IT CAREER OPPORTUNITIES

CALIFORNIA - (Corporate HQ. Employment is throughout US) - Sr. UNIX Administrator.

VIRGINIA - Application Engineer - Develop and test application software.

Positions require a BS and relevant experience; a combination of experience and college level education may be accepted. The flexibility to travel and be on-call may be necessary. Proof of legal authorization to work in the U.S. is required. Please forward your resume to Computer Sciences Corp., Attn: J. Le, 2100 E. Grand Ave., Mail Code A209, El Segundo, CA 90245. Please indicate the specific job title and location for which you are applying.

PROGRAMMER/ANALYST to analyze, design, develop, implement and maintain client/server and web-based application software for the insurance industry using Java, C++, JavaScript, Servlets, JSP, SOL, Oracle and iPlanet Web Server under Windows and UNIX operating systems. Require: B.S. degree in Computer/Info. Science, an Engineering discipline, or a closely related field with 2 yrs of exp in the job offered; A M.S. with a demonstrated ability to perform the stated duties gained through academic coursework/previous work exp will be accepted in lieu of the B.S. and 2 yrs of exp. Competitive salary offered. Send resume to: Infinity Insurance Company, P.O. Box 444, Birmingham, AL 35209; Fax at 205-803-8406; or E-mail at Jobs@Infinity-Insurance.com; Attn: Job QX.

ENGINEERING
UNIX Admin. Framingham, MA. Resp. for day-to-day operation component of the INSITE UNIX environ. Ensure daily backups are successful, scripting, SUN hrdwr support, sys. admin., basic ntwrk. admin., NMS applic. admin., Solaris admin. - file systems & Linux admin. Address INSITE tech. issues w/ INSITE Sr. Tech. Engr & Ops. Mgr. Keep up to date w/ Sr. Tech. Engr. in terms of prod. dvlpmnt, new services, technical issues, etc. Participate & contribute to INSITE Services Forum. Req's: Bach.'s (or equiv. combo. of educ. & emplymt exp.) in CS/Comp. Tech./Engr.; plus 2 yrs exp in job offd or as Engineer. Exp., which may be concurrent, must incl. 2 yrs exp working w/ UNIX on a daily basis. Mail resume to D.Schofield, DDNA, 135 Newbury St., Framingham, MA 01701.

Software Engineer - Develop, create, modify computer syst/apps software & specialized utility programs. Analyze, design databases within an application area. Analyze user needs, develop software solutions using Enterprise Resource Planning/related software. Bachelor's degree or foreign equiv. Will accept 3 yrs undergrad. study & 3 yrs exp as computer professional in lieu of Bachelor's degree. Degree must be in CS/CA, Eng., Chem., Math, Physics, or scientific/business field. Must have 1 yr exp using SAP, BAAN, PeopleSoft, Oracle Apps/Finance/Manufactg/HR. Extensive travel, frequent relocation. \$66,800/yr, 40 hrs/wk. EEO/AAP/M/F/V/H Submit resumes to Mon Valley Regional CareerLink ATTN: Actg. CL Program Supervisor, Donora Industrial Park, 570 Galiffa Drive, Donora, PA 15033. Job Order No. WEB 442799

PROGRAMMER/ANALYST to analyze, design, develop, implement and maintain client/server and web-based application software for the insurance industry using Java, C++, JavaScript, XML, UML, J2EE, EJB, Servlets, JSP, SQL, Oracle and iPlanet Web Server under Windows 98/2000/NT/XP, UNIX and SUN Solaris operating systems. Require: B.S. degree in Computer/Info. Science, an Engineering discipline, or a closely related field with 2 yrs of exp in the job offered; A M.S. with a demonstrated ability to perform the stated duties gained through academic coursework/previous work exp will be accepted in lieu of the B.S. and 2 yrs of exp. Competitive salary offered. Send resume to: Infinity Insurance Company, P.O. Box 444, Birmingham, AL 35209; Fax at 205-803-8406; or E-mail at Jobs@ipacc.com; Attn: Job OX.

CG Roxane, LLC, a leading French water bottling company, is in search of a Systems Analyst for its Olancha, CA office. Position requires an Associate's or foreign equivalent in Comp. Sci., MIS, CIS, IT or related field of study & 2 years of experience in systems analysis or computer programming. Experience must involve work with EDI, AS2, Gentran, and AS400. Also requires fluency in French in order to conduct business with French parent company counterparts. Send resumes and cover letters to Sharon Dohm, HR Manager-CA, 1630 Kellogg Drive, Weed, CA 96094. EOE.

Senior Software Engineer to design, modify and develop full-life cycle carrier-class and enterprise-class Voice Over IP software/solutions using H.323 Gatekeeper/Gateway which are implemented using H225 RAS, H225 (Q931) and H245 protocol suite. Ensures integration of software for SIP User Agents with SIP Registrars, SIP Proxy Server and Redirect Servers. Develop IP Call Signaling applications and protocol signal conversion to allow calls from H.323 domain to interoperate with SIP domain. Debug VoIP software application modules using tools such as SIP/H.323 protocol analyzers/monitors. Performs software requirement analysis for VoIP applications and innovate customized VoIP solutions. Test IP-Telephony software to ensure compliance with IETF protocol standards and compatibility with third party vendors. Requires Bachelor's Degree in Software Engineering, Electrical Engineering, or Electrical and Electronics Engineering and three years direct experience. Send resumes only, no calls, to: 1603 Orrington Ave, Ste 1190, Evanston, IL 60201. Fax: 847-864-4423.

Senior Systems Engineer
Geac Enterprise Solutions, Inc., a leader in software solutions, seeks qualified candidates for the position of Senior Systems Engineer to develop and test technical migration strategies, modify company software products for utilization in Web-based architectures, train technical support staff in new migration strategies, and contribute to the pre-release testing and configuration of company products installed at client sites. Requires: Bachelor's degree or equivalent experience in Computer Science, M.I. S. or Electrical Engineering, and experience with SQL Server 6.5, and POS systems support and engineering. Also requires expertise with install packages including InstallShield and InstallScript, and software development in VB and InstallScript. Position located in Nashua, NH. Submit resume to: jobs.ma@geac.com. EOE.

ORACLE DBA/DEVELOPER

Utilizing commodities market knowledge, responsible for overall design, development and support of the company's database system using ORACLE 8i/9i and Java Application Servers (BEA, JBoss, and Tomcat). Develop application code using Advanced PL/SQL. Responsible for production support for existing database systems including backup, setup and maintenance. Require: Bachelor's degree in Computer Science, Information Systems, or closely related field, with 4 years of experience in the job offered or as a Database Architect; Prior experience must include 2 years in ORACLE, PL/SQL and Java. Must have ORACLE 8i or 9i certification. 8 am to 5 pm, M-F. Send resume to: HR, Intercontinental Exchange, Inc. 2100 RiverEdge Parkway, Atlanta, GA 30328 - (No Phone Calls Please).

COMPUTERS-Ea inc., a leading IT consulting firm with exciting job opportunities, is looking for IT professionals to add to its fast growing team. We have openings for Software Engineers, Programmer Analysts, Systems Analyst and, in particular, SAP professionals. Qualified candidates will have a bachelor's degree in computer science, science or engineering and/or relevant industry experience. Positions may req. relocation to client sites throughout US. Send resumes to HR Manager, ea inc., 1130 Iron Point Rd. Ste. 288, Folsom CA 95630

Systems Integration Specialist - Plans, coordinates, and implements software application development and integration activities in a team environment. Deploy third-party software products. Works closely with customer representatives to establish customer requirements. Translates high-level requirements into system design and creative solutions. Performs system design, development, and installation of complex multi-system applications in a geographically diverse environment. Performs system customization, testing and error correction. Develops conversion plans and procedures, and documents all phases of system development. Will utilize listed requirements during the course of duties. Requires Bachelors Degree in Computer Engineering plus four years of experience in job offered or four years of experience in Application Software Development. Experience must include LDAP in schema modeling, design and programming, JNDI, MS access and ! SQL Server, Visual Basic, Visual C++, MFC, Java Servlets, Crystal Reports, and ActiveX. Web programming using multiple languages, object oriented analysis/design and in software development life cycle for enterprise application implementations. Experience with Peregrine AssetCenter and Web-Server component skills. Salary: \$80,482/year, 40 Hours/week, M-F, 8:00am to 5:00pm, Job Location: Mechanicsburg, PA. Job Order #: WEB 442992. Send resumes with reference to job order # to: Attn: M. Texter, Cumberland County CareerLink, 1 Alexandra Court, Carlisle, PA 17013.

Software Engineer - Develop, create, modify computer syst/apps software & specialized utility programs. Analyze, design databases within an application area, analyze user needs, develop software solutions using Relational Database Management Systems/related software. Bachelor's degree or foreign equiv. Will accept 3 yrs undergrad study & 3 yrs exp as computer professional in lieu of Bachelor's degree. Degree must be in CS/CA, Eng, Chem, Math, Physics or scientific/business field. Must have 1 yr exp using Informix, Oracle, FoxPro, Sybase, SQL Server or Progress. Extensive travel, frequent relocation. \$66,800/yr 40 hrs/wk. EEO/AAP/M/F/V/H Submit resumes to Armstrong County CareerLink, ATTN: CL Program Supervisor, 1270 North Water St, PO Box 759, Kittanning, PA 16201-0759. Job Order No WEB 442794

Software Engineer- Develop, create, modify computer syst/apps software & specialized utility programs. Analyze, design databases within an application area. Analyze user needs, develop software solutions using SAP CRM & related software. Bachelor's degree or foreign equiv. Will accept 3 yrs undergrad study & 3 yrs exp as a computer professional in lieu of Bachelor's degree. Degree must be in CS/CA or Eng. Must have 1 yr exp. using SAP CRM. Extensive travel, frequent relocation. \$66,800/yr 40 hrs/wk. EEO/AAP/M/F/V/H Submit resumes to Fayette County CareerLink, ATTN CareerLink Program Supervisor, 135 Waylan Smith Drive, Uniontown, PA 15401 Job Order No WEB 442764.

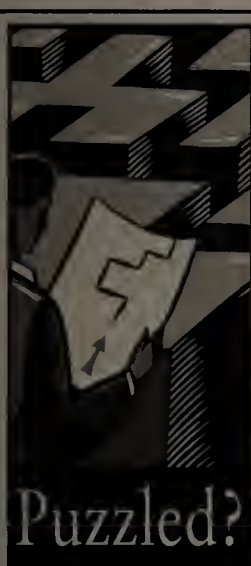
Programmer Convert project specifications and statements of problems and procedures to detailed logical flow charts for coding into computer language. Develop and write computer programs to store, locate, and retrieve specific documents, data, and information. May program web sites. Analyze, review, and rewrite programs. Develop programs from workflow charts or diagrams, considering computer storage capacity, speed, and intended use of output data. Prepares or receives detailed workflow chart and diagram to illustrate sequence of steps to describe input, output, and logical operation. Compiles and writes documentation of program development and subsequent revisions. Assigns, coordinates, and reviews work and activities of Jr. Programming personnel. Trains subordinates in programming and program coding. Use a variety of software tools including but not limited to: Cobol, CORBA, Fortran, Visual Basic, Oracle, PeopleSoft, Crystal Reports, J2EE, C++, Servlets, XML, SQL & Weblogic. BS degree or foreign edu. equiv. and 1yr exp. req. Will accept any suitable combination of edu, training or exp in lieu of the stated edu. Travel and/or relocation required.

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U.S. Banks

help service providers, but will also allow banks to more efficiently retrieve data for regulators — something that today is an arduous and expensive process, said Richard DeLotto, an analyst at Gartner Inc.

The question is, "How would you pull that off in the U.S.?" said Steven Schutze, director of e-strategies at the American Bankers Association in Washington.

The Canadian initiative will give banks and third parties, such as market research companies and check-processing firms, a standard way of labeling and protecting public, internal, regulated and highly

sensitive data, Garigue said.

Unlike in Canada, where the country's five major banks are regulated only by the federal government, dozens of major U.S. banks fall under the regulatory purview of state and federal agencies, making it far more difficult to develop standards, DeLotto said.

An executive-level source within a large U.S. financial services consortium, who spoke on condition of anonymity, said the topic of a common data-classification scheme has been widely discussed within the banking industry over the past year. But he said banks are unwilling to speak openly about it for fear that regulators will take over the initiative and force it on the industry.

Class Act

Canada's data classification standard aims to:

- **Allow third-party service providers** such as check-processing firms to apply more consistent controls to different categories of data.

- **Enable better information sharing** between banks and third parties.

- **Enable better processes** for data capture, retention schedules, access, sharing and eventual disposal.

"Having standards in security practices between our industry and service providers is something that's viewed pretty universally as an area

that needs to advance," the source acknowledged.

"It doesn't seem to me that the financial sector here would embrace a single standard unless it was something mandated by the government," said Adam Stone, a security management analyst who asked that his company not be named.

Bob Foster, staff director for the House Financial Services Committee, said it's likely that the issue of data classification for banks will be debated once Congress is back in session next month. "It's safe to say if we're talking about consolidating oversight, then we'll be talking about the mechanisms to do that," Foster said.

"The compliance obligations that banks will have as it relates to managing and mea-

suring operational risk under Basel II" international financial regulations make it a good idea to have a data classification standard, Stone said.

According to Garigue, an agreed-upon industrywide data-classification scheme will enable better interoperability, integrated services and use of data. For example, common business-to-business applications across several banks can be standardized with respect to password management and role-based access to client information, he said.

"We know a lot of banks also have a lot of problems getting their [CRM] programs together because of bad data hygiene," DeLotto said, which makes data classification standards a necessity. **48810**

Continued from page 1

Linux POS

registers is The Pep Boys. The Philadelphia-based automotive retail and service chain in June disclosed plans to partner with IBM and Austin-based 360Commerce Inc. on Linux-based POS systems at its 595 stores.

Michael Jones, CIO at Richmond, Va.-based Circuit City, said his company's decision to migrate to IBM hardware and 360Commerce POS software running on Linux was based on total cost of ownership and a desire to move to a less-customized POS system from a single vendor.

Jones said IBM recommended Novell Inc.'s SUSE Linux for its POS hardware, which can also run Windows and IBM's 4690 operating system. He said IBM will handle any dealings with Novell, as well as the collaboration with 360Commerce and Yantra Corp., which is providing the integration engine. IBM Business Consulting Services will help Circuit City plan the migration.

Since 1999, Circuit City had been transitioning from the homegrown proprietary POS systems it had built in the mid-1980s to Hewlett-Packard Co. hardware running Microsoft Corp.'s Windows XP Embedded and a heavily customized version of 360Commerce's POS software.

But five years into the project, the retailer had migrated to the Windows-based HP hardware at only 100 stores, or roughly 2,000 of its 12,000 registers. Circuit City IT executives said the impetus to switch to IBM hardware had nothing to do with dissatisfaction with HP or Microsoft, both of which the company continues to work with on other projects.

"The previous solution would work and did work, but in five years, a lot of advancements had occurred, and we didn't need the customized POS environment," said Bill McCorey, vice president of business applications at Circuit City. "Five years ago, Linux was a test environment. Now, it's truly production-ready."

"It's a TCO evaluation," said Jones. He estimated that support and postdeployment

costs will be cut by at least 30% with the new system. "Our TCO has been significantly reduced, and we owe the organization and the shareholders that," he said.

Maintaining Focus

Jones said Circuit City wants to move to a more "vanilla" version of the latest edition of 360Commerce's POS software so it can focus on its retail business rather than on software development. Instead of customizing the 360Commerce software, Circuit City plans to sit on the vendor's retail standards advisory committee to try to influence the future direction of the commercial product.

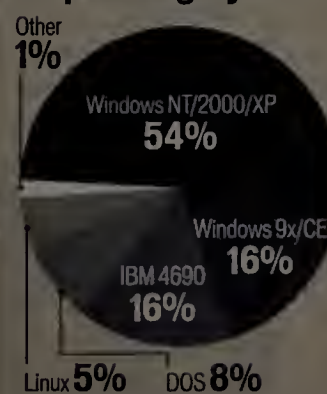
Seeking to reduce annual support costs, Circuit City is exploring the possibility of running the 360Commerce software on central servers and distributing it through gateway servers located closer to or at the stores. The cash registers will access the POS application from the server — a significant change over the existing, thicker client footprint.

Circuit City isn't worried about the servers or network

going down, since the cash registers will be able to run and store information locally in the event of a problem. The retailer also plans to eventually have wireless handheld devices, but it hasn't decided on the technologies.

With planning assistance from IBM Business Consulting Services, Circuit City hopes to complete its migration to the Linux-based IBM POS hardware within 18 months.

POS Shipments In 2003, by Operating System



Report published March 5, 2004
SOURCE: IHL CONSULTING GROUP, FRANKLIN, TN

Interestingly, another major retailer, Sears, Roebuck and Co., recently opted for the IBM SurePOS/360Commerce combination, but it's in the process of finalizing a deal with Microsoft for the operating system. CIO Gary Kelly said IBM gave SUSE Linux "a good, strong push," but his company chose Windows XP Embedded for security, stability and its overall capability.

Although Windows takes hits on the security front, Kelly said Microsoft has been improving its response to vulnerabilities. He added that he thinks Linux will ultimately become a target too. Kelly also cited the prospect of legal disputes as another factor against Linux.

Jones said a half-day meeting with an IBM attorney convinced him that intellectual property will not be an issue. And where security is concerned, Circuit City thinks it's on safer footing with Linux.

"To date, you don't have quite the security risks and concerns," said McCorey. "The Microsoft environment is the largest target for hackers." **48812**

FRANK HAYES ■ FRANKLY SPEAKING

Lite a Fire

IT'S OFFICIAL: You're now paying much more for Microsoft Windows than some of your potential competitors. Last week, Microsoft confirmed that starting in October, it will offer Windows XP Starter Edition, a cheaper, scaled-down XP, to PC customers in Malaysia, Indonesia and Thailand, with two other not-yet-named countries soon to join that list [QuickLink 48757].

How much cheaper? Microsoft won't say yet, but published reports quote retail prices of \$40 for a still-very-functional version of Windows XP. The version you're using retails at \$499.

Are you getting hosed? Maybe so. But it is the right thing for Microsoft to do. And you should be glad it's happening.

According to Microsoft, this "XP Lite" is both more affordable and easier to use and support than regular XP. It won't handle multiple user log-ins, PC-to-PC home networking, printer sharing or having unlimited windows open at once. It will support Web browsing and security.

Sound like something you could use? You can't have it. Why? Because you're willing to pay for full-blown XP, that's why.

Look — Microsoft has said for years that it wouldn't offer a Windows Lite. It's doing so now only because people in some markets simply aren't buying Windows XP. With the threat that Linux could start displacing Windows in those markets, Microsoft had to do something radical.

Will it work? It may, though there's no guarantee. Remember, XP Lite isn't something Microsoft's customers demanded. Microsoft's customers were already buying XP. XP Lite was created because of people who *weren't* Microsoft's customers. By refusing to buy, they forced Microsoft's hand.

And Microsoft wisely did what the market required — even though those could-be customers *still* may not go for XP Lite. It's a gamble that might not pay off. But for Microsoft, it's worth a shot.

What does that mean for the rest of us, half a world away? Well, if you compete against companies in Malaysia, Indonesia or Thailand, it means those competitors just got an advantage over you: a cheaper, simpler version of Windows XP. It may be a small advantage, but in a globalized economy, every little bit matters. That's the downside.

The upside is that Microsoft is now doing what was once unthinkable:

trimming down a product to what users need. After two decades of bloating Windows and insisting that one size fits everyone, Microsoft is finally acknowledging that not all users require all that expensive complexity.

And that's cause for optimism, even if it's based on something that exists only on the other side of the globe. After all, if Microsoft debloated its software for them, why not for us?

You already know the answer to that question. XP Lite happened only because Microsoft was forced into it by people who wouldn't buy the existing product.

And as long as you're still willing to buy what Microsoft is selling, that's what you'll get.

So if you want products like XP Lite — tighter, less expensive, and easier to train for, use and manage — you'll have to demand them. And you'll have to back up that demand by refusing to buy software that isn't what you want.

That may mean putting off that next round of upgrades. Or using open-source software. Or getting products from vendors so desperate for sales that they'll deliver what customers need.

Or building smaller, more targeted applications yourself. It won't be easy, and it could get ugly.

But we've been lamenting bloatware for years. Now, finally, we're seeing the first moves toward cleaner, more affordable Microsoft software. It may not offer much hope, but it's worth a shot.

After all, people in Malaysia, Indonesia and Thailand got Microsoft to listen to what they need. Who knows? If we work hard enough at it, maybe Microsoft will listen to us, too. **48783**



FRANK HAYES, *Computerworld's* senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com

Unclear on the Concept

This user wants the latest upgrade he's read about, and he wants it *now*! Help desk pilot fish explains that it's a maintenance-only release, that it won't improve his performance, that the upgrade is already on the schedule — but the user howls that he's got to have it or he'll have fish's head. The help desk prioritizes problems from 1 — most urgent — to 4, so fish asks, "What priority do you want for this? The scale runs from a 1 all the way up to a 4." Gimme a 4! user demands. Says fish, "That's what he got."

Help!

Help desk supervisor is joking with a newly hired IT pilot fish



change on her PC but tells fish she's about to leave for lunch. "I ex-

plain that I will remotely control her PC to make the change," fish says. Her response? "She asks if I will still be able to see the screen if she turns off the monitor."

about how so many users are lacking in basic knowledge about the software they use. "So many questions about Microsoft's operating systems and applications can be solved with a press of the F1 key," fish comments — to which the supervisor replies, "What does the F1 key do?"

Emergency, Redefined

This server installation is an emergency, pilot fish is told, so he flies 1,000 miles overnight to get it set up Monday morning. "I found the server and associated software with no problem, then asked where the server was to be located and where the Token Ring hubs would go," fish reports. "My contact pointed to a blank wall and said, 'They'll be installed there in about two months — when the union electricians put the office on their schedule.'"

In a Word, Yes

Systems analyst asks support pilot fish to make a configuration

Time for a More Formal Password Policy, Maybe?

User to support pilot fish: "What did your T-shirt say yesterday?" Pilot fish: "Why?" User: "Because that was my password, and I've forgotten it."

Probably Not

Business student asks IT instructor why fiber-optic networking cable isn't used everywhere. "Is it because glass is so breakable?" he asks. No, fiber is quite flexible, fish says. Would you like to see a sample? "That's OK," student says confidently. "I have a fiber-optic Christmas tree." When fish brings in a sample of fiber cable, student is puzzled. "That's not what my Christmas tree looks like," he tells fish. "I must have a coaxial Christmas tree."

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